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ABSTRACT

One form of Regional Educational Agency (REA) is the Educational Cooperative, which was under field development for several years by the Appalachia Educational Laboratory, Inc. (AEL) and the United States Office of Education. The program included an evaluation effort, and the general design, instrumentation, and comprehensive bibliography for that effort are presented herein. The general design is from the perspective of the cooperative, or REA, as organization qua system for problem-solving and decision-making, and some of the ideas may be of use in evaluations of REAs. The instrumentation and bibliography cover areas such as needs assessment, planning, evaluation, and organizational management, and other REAs may find some use for the information on instrumentation and bibliography. A formal statement of the development aspects of the program may be found in the monograph, The Educational Cooperative: A Design for a Regional Educational Agency by Hayes Wilcox, et al. through AEL, Inc. (Author)

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Evaluation of Regional Educational Agencies: General Design, Instruments, and Bibliography

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CHAPTER 1

THE EDUCATIONAL COOPERATIVE

Section I. Character of the Educational Cooperative

The Educational Cooperative Development Program was embedded in a neomobilistic decision setting and operated via a decision model of planned change. A neomobilistic decision setting is an attempt to get large change in a low information field. A decision model of planned change is a developmental sequence including needs assessment, feasibility analysis, design and engineering, field testing, and diffusion. The Educational Cooperative Development Program attempted to generate a large change in organizational management structures of school systems from the vantage of a low information field. A product to attain this goal is the Educational Cooperative.

Other decision settings and decision models are involved. The individual Educational Cooperatives probably are in incremental decision settings and operate via a decision model of disjointed incrementalism, small change in a low information field. The local school systems most likely are representative of homeomorphic decision settings and operate via a synoptic decision model, with small change in a high information field. The Educational Cooperative Development Program involved action across these several levels of aggregation in multiple decision settings and operated through several decision models. Considerable complexity inhered in the program relative to decision isomorphism in meaningful product development.

The principal axis of the organizational identity fostered in the Educational Cooperative was the character of a social system with a mission as an institutional educational change-agent. The Educational Cooperative was conceived as a purposive macro-system with an adaptive dynamism for the

facilitation of school system renewal. The purposive macro-system is a regional collaboration on the enhancement of systems decidability. Collaboration on systems decidability evokes a functional compatibility of value-orientations, need-structures, resource mix, and adaptive rationality. Adaptive systems rationality operates under positive sanctions of accountability and effectiveness. The facilitation of school system renewal involves the Educational Cooperative as a model of administrative practices in its systems rationality such that constituents reallocate resources reflecting renewal.

The character of the Educational Cooperative fostered by the Appalachia Educational Laboratory is evident in the objectives and specifications for Educational Cooperatives.

1. Objectives

   a. To make available for the participating districts cost-effective educational programs and services on a regional basis.

   b. To serve as a model of administrative practices which will enable participating districts:

      (1) to analyze educational problems and devise solutions in an orderly, rational manner.

      (2) to reallocate resources in order to achieve desirable educational outcomes.

   c. To bring resources of other organizations (particularly state departments of education and institutions of higher education) to bear upon the problems of participating districts.

2. Specifications

   a. Membership

      (1) Membership in an Educational Cooperative is composed of contiguous school districts whose governing boards agree to join in cooperative effort to attack common educational problems.

      (2) Two types of membership are provided:

(a) Unitary members are those school districts located within a single planning and development district as defined by an appropriate state agency.

(b) Contractual members are those school districts located outside a planning and development district from which the unitary members are located but which are invited to join the Cooperative.

(3) Conditions of membership in the Cooperative are defined by the board of directors of the Cooperative.

(4) The decision regarding the number of member districts to admit to a Cooperative must take into consideration the size of the geographic area (a driving time of no more than one hour from the central location is recommended) and the number of pupils enrolled (no fewer than 20,000 or more than 60,000 is recommended).

b. Governance

(1) The Cooperative is governed by a policy board composed of the superintendents of the participating school districts.

Representation on the board with voting rights may be extended to any agency or organization which has a legitimate interest in the activities of the Cooperative.

(2) The policy board employs a director of the Cooperative who serves as the board's executive director.

(3) The director of the Cooperative has responsibility for the following activities:

(a) To collect and organize information about education outputs of the participating school districts to enable the Cooperative board to establish educational priorities.

(b) To recommend for board evaluation and action appropriate programs to achieve goals specified by the board.

(c) To conduct comprehensive evaluation of each program operated by the Cooperative.

(d) To assign and supervise all personnel involved in programs operated by the Cooperative and to coordinate their activities.

(e) To prepare policies and regulations for the operation of the Cooperative subject to approval of the board.

(f) To prepare and administer a budget for the Cooperative.

(g) To recommend for board action all appropriate matters related to personnel administration.

(h) To establish and maintain mutually beneficial relationships with appropriate agencies and organizations.

(i) To monitor the environment for sources of financial support for the Cooperative.

(j) To administer all facilities and equipment of the Cooperative.

c. Financing

(1) Financial support for Cooperative programs may be solicited from any legal source of funds with approval of the board of directors.

(2) In the event that the Cooperative is not legally empowered to act as its own fiscal agent, a member system performs this function.

(3) Local support of the Cooperative on a per pupil basis is to be encouraged.

d. Services

(1) Programs selected for operation by the Cooperative should meet the following criteria:

(a) The program shall be designed to meet previously identified educational needs within the planning and development district.

(b) The program belongs at a regional level of operation, by reason of economies of scale or is operated as a demonstration.

(c) The program has reasonably good chances of continued funding.

(d) The program is cost effective in comparison with alternatives.

(2) Member school systems may choose to participate in any or all programs offered by the Cooperative.

(3) The process of selecting and operating programs in the Cooperative should adhere to the following sequence of events:

(a) Measure and assess education needs of the districts and Cooperative area.

(b) Identify the rank priority of deficiencies.

(c) Set minimum acceptable standards for solutions.

(d) Specify desired outcomes.

(e) Search for alternative methods to achieve desired outcomes.

(f) Choose most promising acceptable method.

(g) Organize and implement program.

(h) Evaluate results of new program.

Section II. Process

1. Problem-Solving

The Educational Cooperative may be conceptualized as an organizational algorithm for problem-solving, or decision-making, beyond the homeomorphic constraints of the local district in the incrementalistic multi-district domain. The organizational algorithm includes needs assessment, planning, programming, and evaluation. Problems which are basically undecidable on the local level may be solvable on a regional level through this algorithmic process.

2. Needs Assessment

A needs assessment addresses the adaptation of the school system in its external environment. Needs are the coenetic variables through which the educational institution makes a viable interchange with the environment. Needs are the basic alphabetic characters of an algedonic metalanguage of external politics providing completion from without and granting acceptance which amounts to institutionalization of the system. The logical structure of these needs of an educational institution may be incomplete. Attention to incompletability involves continual monitoring and upgrading of the need-structure. Some external validity may be achieved.

3. Planning

Once a need structure has a functional closure, the consistency, cohesiveness, interdependency, coherence, and internal validity of future action must be assured in order to achieve satisfaction relative to identified needs. Pervasive objectivity and reliability are essentials for planned action. Planning formulates an integration of action for goal-attainment on need-satisfaction. This integration is achieved through setting priorities and standards and generating alternative courses of action.

4. Programming

A need structure and plan are followed by a program elaborating a chosen alternative course of action. Elaboration of the program through specifications compatible with standards is a design activity. Program maintenance through resource allocation and internal politics is essential to implementation. The problem of programming is controllability; that is, any system state can be transformed to any final state in a finite time interval by some control.

5. Evaluation

Goal-attainment is the central focus of evaluation. The unhealthy goal defocus and ambiguity of school systems are well known. Perhaps the ultrastability of educational institutions is a reflection on the credibility of the algedonic metalanguage of its needs-structure as well as the relevance of program. Criteria of success enunciated in standards and specifications must be subjected to operationality to synthesize a judgment on effectiveness which is defensible. The basic problem of evaluation is observability; that is, an antecedent state can be determined from output measurements in a finite time interval.

Section III. Structure

A pattern supportive of the process of the Educational Cooperative may be referred to as the structure. The structure includes policy making, a management information system, personnel management, and business management.

Section IV. Product Manuals

Procedures for each of the major aspects of the process and structure were developed through field testing for diffusion to Cooperative consumers. The diffusible products of the Educational Cooperative Development Program is the monograph: The Educational Cooperative. By-products included two field test site Educational Cooperatives, and a methodology for institutional assessment and evaluation included in this document.

The monograph is a guide on organizational management for Educational Cooperatives as institutional change-agents, facilitators of system renewal by macro-dynamics. The monograph is not primarily an instructional package, training material, nor self-teaching materials for administrators. The aim is to facilitate organizational learning, not individual learning. Individual learning is an intervening variable between learning states of the Cooperative, and between the Cooperative and a constituent school system. The emphasis is nomothetic-transactional, not idiographic-transactional. The level is institutional-organizational, not interpersonal-personal. Of course, the administrator is the mediator of effects.

CHAPTER 2

EVALUATION STRATEGY

Section I. General Strategy

The delineation, procurement, and provision of information relevant to decisions is termed evaluation. The cooperative qua organization is a major decision area. The purpose of this chapter is to suggest a meta-structure for the delineation, procurement, and provision of information about the cooperative qua organization.

Various schemata have been advocated for evaluation, for example, Cook (1970), Provus (1971), Rudwick (1966), and Stufflebeam et al. (1971). The general evaluation model for the cooperative has a theoretical basis in organizational uncertainty (Stepp, 1974).

Any evaluation needs to satisfy certain criteria for adequacy (Stufflebeam et al., 1971. These criteria cover scientific, practical, and prudential conditions. Scientific criteria include internal validity, external validity, reliability, and objectivity. Practical criteria include relevance, importance, scope, credibility, timeliness, and pervasiveness. The prudential criterion is efficiency.

Implicit weights given to the criteria for evaluation reflect the judgmental constraints of the host institution. A mix of uncertainties bearing upon the situation of the given cooperative forge a test of wisdom and art for the leaders.

Under these institutional constraints the evaluator must have a mature sense of integrity and exercise independent judgment; the evaluator must be able to interact with the decision-maker on substantive matters, but be able to detect and reject any nuances of cooptation. Likewise, the decision-maker should extend to the evaluator the trust, faith, confidence, and

essential autonomy to evaluate adequately; the decision-maker must be able to interact with the evaluator on substantive matters, but reject any temptation to either dupe or coopt the evaluator. The principal evaluator would be able to render better service from a position as an external consultant.

Evaluation may be resolvable into two principal emphases, namely, a formative emphasis and a summative emphasis. Formative evaluation differs from summative evaluation in being concerned more with transitory (including transient) conditions in contrast to terminal status, and in an orientation toward parts rather than wholes. The Educational Cooperative may be regarded as an ensemble of decision subsystems: (1) needs assessment, (2) planning, (3) programming, (4) evaluation, (5) policy-making, (6) information systems, (7) personnel management, and (8) business management. In the Aristotelian vein these decision subsystems are the substance of which the specifications are the form. Formative evaluation resolves decision subsystems from each other and determines the potency of each manual in doing its thing in the ensemble-of-manuals. Summative evaluation involves a total view of the ensemble-of-manuals in a dynamic interplay to attain mission. Together the formative-summative evaluation provides an integrated, fused, unified perspective essential for an ensemble-of-manuals.

The control of a process to realize goal-attainment is crucial to the enterprise of the development of Educational Cooperatives, and this concept is basic to cybernetics. The mapping of a policy on the manuals into a realization of an ensemble designed <u>a priori</u> is a cybernetic system. A cybernetic development system may have a model-referent for self-organization which maps a phenogenetic policy and genotypic process into a phenotypic realization; an ontogenetic discriminator, or comparator, may indicate any

deviations from the model-referent to the phenogenetic policy-maker for iterative approximation. In terms of the Educational Cooperative, the genotypes are the decision subsystems, and the phenotypes are the organizational variables accessible to observation. Formative evaluation includes phenogenetic modeling aimed at the generation of policy on the genotypic decision subsystems to converge the phenotypic realization toward the ontogenetic model-referent of a designed Educational Cooperative. Formative evaluation attends to the micro content and summative evaluation attends to the macro content. This is similar to a figure-field Gestalt or a quantum-field framework, that is, a part-whole perspective (Figure 1).

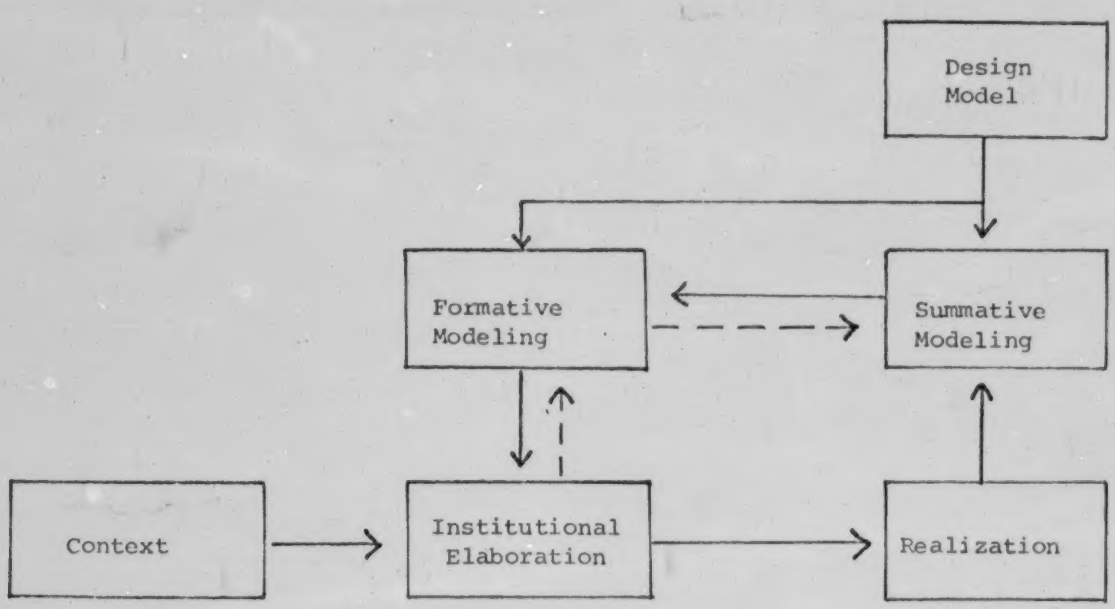

Figure 1

Institutional Evaluation Model

Macro features attended to in summative modeling converge on the designed model-referent for the cybernetic development system. The authentication of realization as a manifestation of design is a central function of summative modeling. The elaboration of realization requires positive feedback to amplify deviation from the preceding state of the system (Buckley, 1967). However, the question of congruence of realization with design is a question of negative feedback, technical deficiency.

Section II. Summative Evaluation

Summative evaluation is concerned with the integrated Educational Cooperative, the overall effect on gross gauges de-emphasizing the decision subsystems as entities. General summative evaluation includes the authentication of elaborated realization as the manifestation of design, without bringing a decision subsystem into sharp focus. This is comparable to sampling the ammonia and giving feedback signals indicating the yield and the rate of yield in the Haber process. Authentication of the embodiment of design in elaborated realization is a basic task of summative evaluation. Confirmation of elaborated realization as an embodiment of design would be a reserved authentication of the adaptive convergence policy. Falsification of elaborated realization as an embodiment of design would demonstrate a need for the modification of the formative convergence policy.

An educational institution, as an assemblage of genotypic actions, is representable by states, a minimum set of numbers expressing the history of the institution - past, present, and future. Of course, some states may be inaccessible and not numerically denotable in the present state of the art of evaluation. However, a state-space of all numerically denotable

coordinates may be conceptualized for the multidimensional phenotypes of realization in institutional development.

1. State-Space Representation

A state-space representation of the Educational Cooperative takes the form of Figure 2. The application of a policy, P, to the state of the institution, S, is mapped into the next state of the institution (δ: P x S→S). Also, the product of the policy-state interaction is mapped into the output yield, Y, that is, ω: P x S→Y. If $s \in S$, $p \in P$, and $y \in Y$, then the mapping functions may be given as vector matrix equations.

$$\delta: \quad \dot{\underline{s}} = A\,\underline{s} + B\underline{p}$$

$$\omega: \quad \underline{y} = C\,\underline{s} + D\underline{p}$$

The change to the next state of the institution may be given by:

$$\underline{s}(t) = \phi(t, t_o)\,\underline{S}(t).$$

wherein $\phi(t, t_o)$ is the state transition matrix.

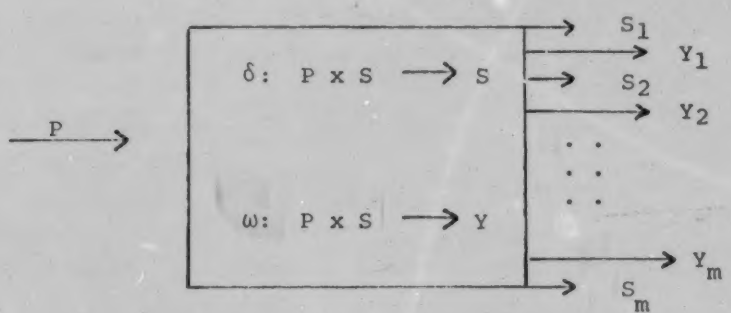

Figure 2

Educational Development:
State-Space Representation

2. Performance Index

Summative evaluation is fundamentally concerned with the performance index of the institution. The adaptive convergence policy in conjunction with existing institutional states maps into a realization with some loss relative to design. The performance index, $Jo(\underline{So}, t)$, is a weighted composite of terminal error, P, instantaneous error, Q, and cost of control, R (Ogata, 1967):

$$J(\underline{S}_o=,t) = \underline{s}^*(T)P\underline{s}(t) + \Sigma^T{}_o\underline{s}^*(t)Q\underline{s}(t)dt + \Sigma^T{}_o\ \underline{p}^*(t)R(t)\underline{p}(t)df$$

The minimization of the performance index provides a capability for making the most expeditious transit along the system trajectory: that is, the institution can map a realization of phenotypes with the least ontogenetic departual stress from the model-referent of design. Thus, a minimal randomness and a maximum negentropy is attainable with reduced error and diminished cost.

The mapping of realization must be a computable function, that is, a finite number of operational actions based on policy must ensue in the phenotypic targets. For each subset of the realization space for which a criterion for satisfaction is to be prescribed, a characteristic computable function must be evaluated which is denotative of acceptance or rejection. A set for which a characteristic computable function exists is a decidable set; otherwise the set is undecidable. Summative variety in the evaluation of the Educational Cooperative is to be decidable sets with characteristic computable functions for the mapping of the conjunction of adaptive convergence policy and institutional states into next-states and output yield.

The variety space must be capable of regarding the realizations of several Educational Cooperatives as homomorphic cases of each other and with the model-referent of design. That is, the model-basis must be

representative of all Educational Cooperatives, whatsoever, with respect to institutional state variables, control policy variates, and output variety.

Section III. Formative Evaluation

1. Adaptive Convergence Policy

Formative evaluation may well be said to be concerned with the continuing modification of policy on the microcosm of manuals and their implementation to yield desired results. The formative focus is upon the manual implementation first, and upon the Cooperative ensemble only as a target status. This is comparable to planning the changing of the temperature and pressure to shift the equilibrium in a chemical reaction, such as the Haber process in generating ammonia, from hydrogen and nitrogen.

The elaboration of realization is a morphogenetic transition, the actualization of design, and more than a terminal congruence. The actualization of design through the elaboration of realization from micro units, or manuals, is formative convergence. The elaboration of realization is a self-organizing embodiment of the decision subsystem and implied interrelationships. Self-organizing embodiment is attained through the encoding of an adaptive policy on the convergence of realization upon the designed model-referent. An adaptive convergence policy is the focal, proximate target of formative evaluation.

Policy change is induced by the corruption of phenotypic realization, degradation in performance, and entropic degeneration. The finite game of formative convergence, in terms of the states and outputs of the institution, involves hunting in a parallel search through the repertoire of the multivariate weights of possible moves to stabilize the institutional mapping.

Stabilization precludes the dissipation of scarce resources and a movement of the operational trajectory beyond the boundaries of a feasible universe. Lipunov's second method for stability analysis is a germinal prospect for application to this problem (Lipunov, 1966; Ogata, 1967; Schultz and Melsa, 1967). Once stabilization is attained, the satisfaction of system goals may be pursued (Messarovic, 1970). In some instances it may be possible to optimise yield, for example, in reallocation of resources, by applying the methodology of optimal adaptive control systmes (Bellman, 1961; Aoki, 1967; Koenig, 1967; Zemach, 1969).

2. Formative Search

A test of translational loss, a discrepancy between level of aspiration and expected value of reward, is made relative to minimum standards and program specifications. March and Simon's (1959) general model of adaptive motivated behavior leads to several propositions on Cooperative system-level behavior.

1. The less satisfaction, S, (on standards and goals or specifications): the greater the search, L, for solution.
2. The greater the search, L, for solution; the higher the expected value of reward, E (Y).
3. The higher the expected value of reward; the greater the satisfaction.
4. The higher the level of aspiration, Y_g; the less the satisfaction.
5. The higher the expected value of reward; the higher the level of aspiration.
6. A constant level of aspiration implies a stable equilibrium with level of aspiration exceeding expected value of reward.
7. A constant expected value of reward implies a search directly proportional to the expected value of reward.

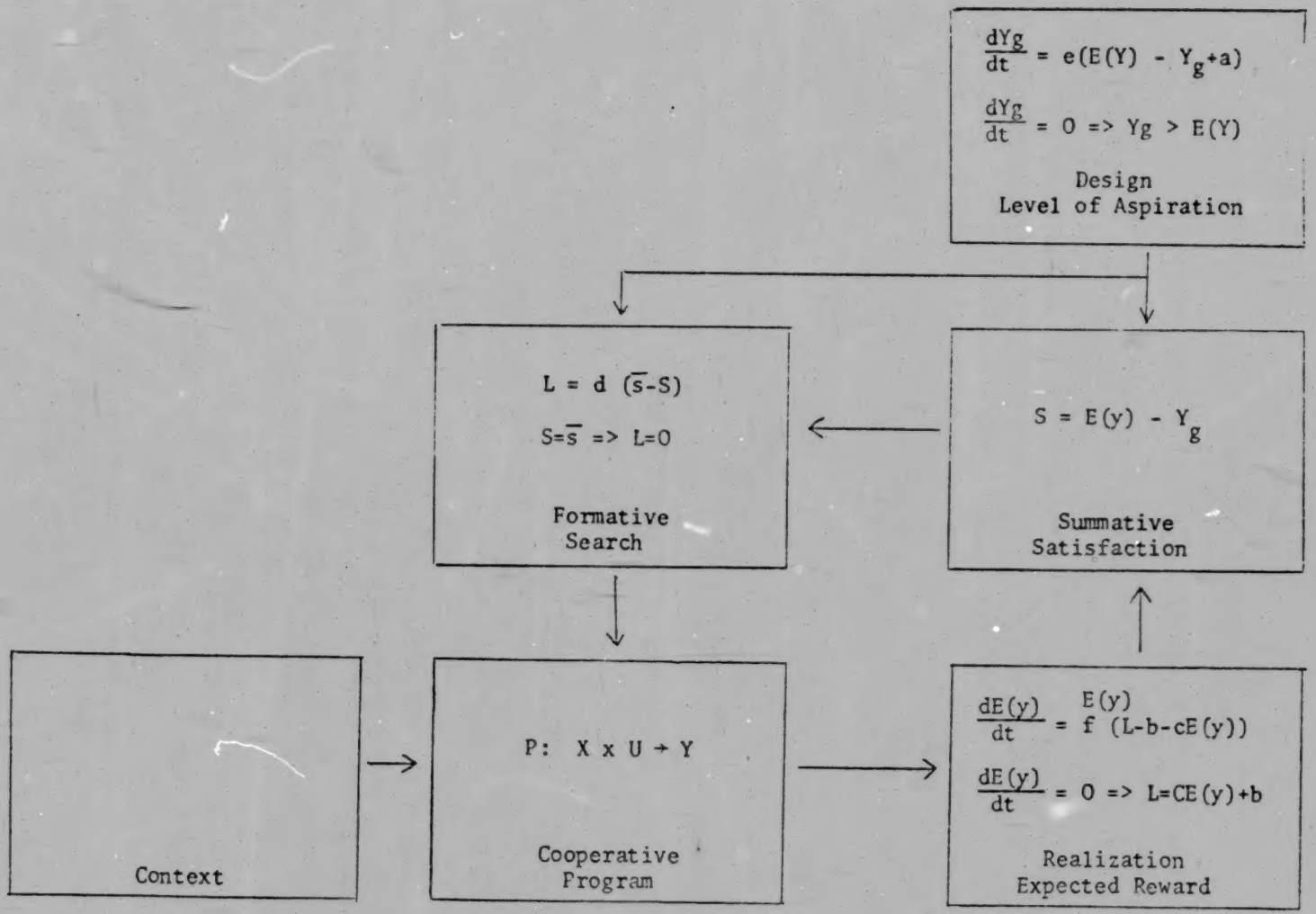

Figure 3

Adaptive Purposive Cooperative

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8. The equality of level of aspiration and the expected value of reward implies a threshold or residual search.

9. The equality of satisfaction with a certain multiple (or fraction) of the residual search rate implies a cessation of search.

Section IV. Summative-Formative Contrast

A conceptual model of educational development has been synthesized which is based upon self-organizing cybernetic systems. Predicated in the self-organizing system is the elaboration of realization in accord with an adaptive policy of convergence toward a designed model-referent. Continuing scrutiny of the need for the adaptation of the policy of convergent elaboration of realization is the function of formative evaluation. The modeling of elaborated realization as an embodiment of design is summative evaluation. Confirmation of elaborated realization as an embodiment of design would be strong support for the authentication of the adaptive convergence policy! Falsification of elaborated realization ss an embodiment of design would demonstrate a need to adapt the convergence policy.

It would be good to expect a convergence in the formative and summative models, but, as with experimental research on complex gases, an empirical lack of fit may become evident between the formative analogue and the summative idealization.

For simple particulate ensembles the idealization by the macro-model was fitted perfectly by the micro-model. However, complex particulate ensembles were modeled better by the micro view than by the macro view.

Nevertheless, the institutional state-space S, the formative convergence policy, P, and the realization, R, should be relatable by mapping functions δ: $P \times S \rightarrow S$ and w: $P \times S \rightarrow Y$, for next-state, S, and output yield, Y. The entire model is that of institutional automata (P,S,R,δ,W).

The institutional automat have a capability for self-organization through a self-renewing, adaptive planning and evaluation. Local school districts become caught up in their own sinks of decision networks, under the constraints of context, and expediencies to the extent that the (P,S,R,δ) constitute situations of undecidability. The Educational Cooperative provides an unfreezing of language, injects a transcending metalanguage, and generates a new range of decidability in the problem solving, coping behavior of the school systems. The local districts will attain a stronger autogenetic posture as self-organizing automata in the hierarchical, multilevel institutional framework of education.

Autogenetic educational institutions confronted with undecidability may enrichen their variety by the appropriation of specialties as black boxes of metalogic for effective completion-from-without (Beer, 1959). The Educational Cooperative is an instrument for mutual symbiotic completion-from-without with respect to the misfortunate sinks of system status and performance which reflect undecidability induced principally by the Appalachian environment (including subcultural influences).

1. Formative-Summative Contrast

The formative and summative emphases in evaluation may be elucidated by a tabular presentation of aspects and emphases, Table 1.

Table 1

Formative-Summative Contrast

Aspect	Emphasis	
	Formative	Summative
Aim	Tactics, specifications	Strategy, objectives
Emphasis	Technical efficiency	Theoretical adequacy
Scope	Fractional, infra-structure, micro-processes	Holistic, supra-structure macro-processes
Locus	Internal	External
Mode of operation	Negative feedback	Positive feedback
Decision points	Real-time	Discrete-time
User	Producer (Consumer)	Consumer (Producer)

CHAPTER 3

THEORETICAL ADEQUACY

Section I. Ordered Concerns

The evaluation of the Educational Cooperative involves at least three ordered concerns: theoretical adequacy, congruence, and program effectiveness.

Theoretical inadequacy is the selection of an inappropriate strategy. A strategy is a repertoire of variety and manipulations to influence payoff in a contest for stakes with an opponent (Ashby, 1956), in the sense of cybernetics. A strategy may include extraneous variety or exclude relevant variety and be characterized by theoretical inadequacy. The case of extraneous variety is a lack of parsimony a redundancy not preventive of strategic validity. Strategic validity is the extent to which the transmitted influence of variety is the intended influence. The exclusion of relevant variety from a strategy may prevent strategic validity from being attained.

Section II. Requisite Variety for System Decisions

Theoretical inadequacy is crucial and justifies an intensive search to preclude a premature closure on criterion variety, elements of satisfaction with realization in reference to the design model. Ashby's principle of requisite variety states that variety can be driven down only by variety in the control or regulator (Ashby, 1956). Haberstroh (1965) has given this principle a high recommendation for organizational design. The control of realization requires a repertory of variety large enough to squelch noises and disturbances.

An autogenetic, self-organizing institutional system may be subjectable to undecidability through improper attention to requisite variety. For the Educational Cooperative, this could be tantamount to forfeiture of the completion-from-without which is so crucial to the metalogic of the morphogenesis of Appalachian school systems. The variety must be permissive of mappings of characteristic computable functions translating micro policy and the states of Educational Cooperative into macro realization.

The universe of decisions includes four subsets: planning, structuring, implementation, and recycling. These system decisions are gneeralizable across all decision subsystems of the Educational Cooperative.

1. Planning Decisions

The formulation of objectives constitutes a system decision subset relative to the operation of each decision subsystem. The delineation, gathering, and providing of information to fund planning decisions is context evaluation. This information pertains to intended ends of the decision subsystem. The principal issue is incompletedness requiring strategic shifts in the goal-structure of the design. A functional closure may be certified to be emboided in the design as well as engender a repertoire of strategic shifts.

2. Structuring Decisions

System decisions on each decision subsystem pertaining to intended means are to be made. The fundamental concern of a structuring decision is the design. The principal issue is consistency, and the modality of information is input evaluation.

3. Implementation Decisions

Means and actual effects are coupled in system decisions on the decision subsystems. Concern is for program operations. The delineation,

gathering, and providing information to fund implementation decisions pertaining to each of the decision subsystems is process evaluation. The principal issue is controllability; that is, the problem is the manipulation of states to generate a transition sequence to create consequent target states.

4. Recycling Decisions

Recycling decisions on the decision subsystems of the Educational Cooperative constitutes a congruence judgment between actual relization and ends, that is between consequent and consummatory states. The delineation, gethering, and providing of information pertaining to recycling decisions is product evaluation. The principal issue is observability; that is, the problem is the identification of antecedent states from an observation of outputs over a finite time interval.

5. Criterion Model

Technical deficiency is incongruence between design and realization. Design incorporates desirable features into a model, a prepresentation of desired existence. Elaborated realization is the actual existence attained in continuous reference to the correspondent design model. A design for the Educational Cooperative includes descriptive and performance constraints, or designed syntality and designed synergy, respectively. Syntality is the set of ensemble characteristics for a group or organization, such as an Educational Cooperative. Synergy is the subset of syntality encompassing dynamic features of the ensemble. Realized syntality of an Educational Cooperative may be discrepant from modeled syntality: inclusion, control, fiscal investment, Cooperative rationality, and regionality. Realized synergy of an Educational Cooperative may not sufficiently reflect modeled

Table 2

Decision Variety

System / Decision Subsystem	Planning	Structuring	Implementation	Recycling
Process				
Needs Assessment				
Planning				
Programming				
Evaluation				
Structure				
Policy Making				
Business Management				
Personnel Management				
Information System				
Institutional				

synergy: program cost-effectiveness, local rationality, resource reallocation, and resourcefulness.

Criterion properties are those characteristics of a thing with sufficient import to be used for judgmental anchors of satisfaction, and they may be constituted as complex aggregates of more atomistic components. A criterion property may be an attribute, present or absent, devoid of decomposable elements. On the other hand, a criterion property may be a scalable compound representable by the degree and extent of its presence. Criterion properties underwrite the specifications of an Educational Cooperative, and evaluation is consequential to the primitive concept of a basis for satisfaction (Hemphill, 1967) relative to such properties.

Malcolm Provus (1970) has defined a criterion model as "that ideal view of the world or some minute aspect of the world that man employs to understand, explore, or shape his 'real' world." A domain of relevant variables is mapped for realization. Attributes and variables conceptualize the presence and extent of characterization of entities by properties. Properties with a significant basis for satisfaction with existence or degree of presence are designated criterion variables and attributes (Horst, 1965).

The elaboration of a criterion model involves the identification and designation of variety as the bearers of relevant information of social significance. A generalized classification of variety, attributive and variable, has been described by Dubin (1969). Dubin (1969) has defined the following types of units: enumerative, associative, relational, statistical, summative, and complex.

The acceptance of variables and attributes (properties) as relevent facets of a criterion model must consider the scales of measurement (Stevens,

1959) as well as the property as a concept (or unit) per se. Stevens set down four basic scales for four basic empirical operations, viz: nominal, ordinal, interval, and ratio.

An Educational Cooperative, as a complex entity, has numerous properties. Those properties essential to the elaborated realization of the Educational Cooperative have been given in the form of specifications. Actually, the specifications demarcate the boundaries of the domain of a relevant criterion model. In other terms, specifications invest selected properties with relevant importance in the idealization of the "real" world.

Any technical deficiency for any variable would be demonstrative of stress in elaborated realization. Such demonstrated stress would ensue in the modification of the adaptive policy on convergence toward the given design model-referent to relieve such stress and assure a greater embodiment of design in elaborated realization. Falsification of the embodiment of design in elaborated realization as a demonstration of stress, a technical deficiency, should trigger a coping behavior directed at formative convergence. An ultimate case of summative modeling would be a thorough authentication of the embodiment of design in elaborated realization within the criterion thresholds and sensitivities on satisfaction. Tn this resepct, summative evaluation encompasses a continuing concern with the formative interface of modifying the policy of converging realization toward design, and is not a distant penultimate requiem. Authentication of aspects of the realization may take place, for example, relative to inclusion as a criterion variable, along the trajectory of elaboration near the origin, whereas, with regard to another channel of variety, authentication may not be conceivable except at the terminal of the trajectory.

Criterion variety must be capable of strategic validity despite noisy disturbers. Criterion variables have direct, noisy disturbances referred to as contingency variables. The dismissal of relevant variety from selected strategy may reduce strategic validity, especially in a prescriptive constriction on criterion variety and arbitrary nullification of contingency effects. Any independent, operational indicators of criterion variables have noisy disturbers called suppressors, and they deserve some consideration, Figure 4.

Embedding, operating, and testing an organization is a complex enterprise and could demand a complex variety to achieve meaningful evidence of the effect of design. Requisite variety, with strategic validity, is critical to the evaluation of the Educational Cooperative. Theoretical inadequacy is conceivable in such a complex enterprise. If the Educational Cooperative can fail, even so can the evaluative effort fail. A premature closure on criterion variety could lead to theoretical inadequacy and worse--a theoretical inadequacy to cope with theoretical inadequacy.

Disturbers should be ignored in an early evaluative effort, Figure 5. In the event that technical deficiency or theoretical inadequacy become evident in the development of Educational Cooperatives, criterion variety may be reexamined with respect to strategic validity. This is what might be construed as a reserved closure on criterion variety. Accordingly, attitudes values, personal constructs, and risk-taking behavior, and other such disturber variables are to be ignored in the early evaluation of the Educational Cooperative, especially as accentuated fundaments.

6. Variety Map

A set of correspondences between classes of variety and organizational levels establishes a map for facet analysis. Conceptualization of the

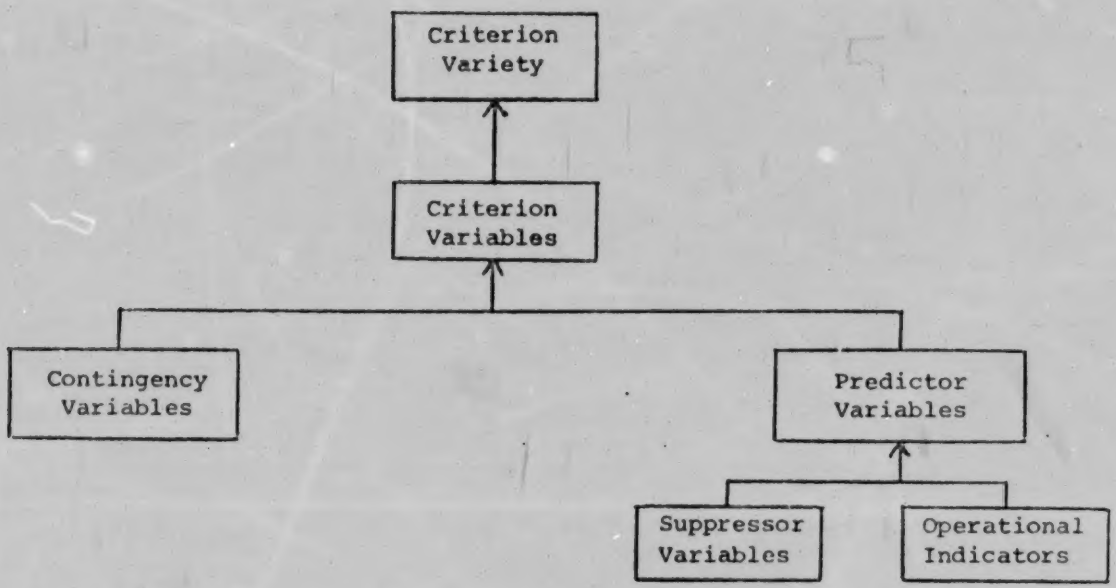

Figure 4

Criterion Variety

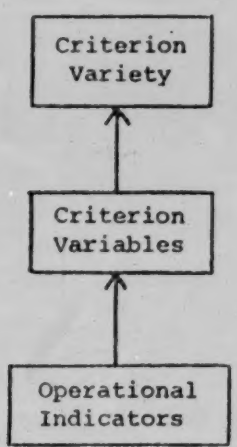

Figure 5

Operational Indicators

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evaluation model allows sufficient specificity of criterion variables and operational indicators in their correspondences with activity events and tasks, respectively, to allow for state minimalization. Criterion variables represent the product decision satisfaction - controls and the operational indicators are the actionable, manipulatable metrics under constant search by formative evaluation.

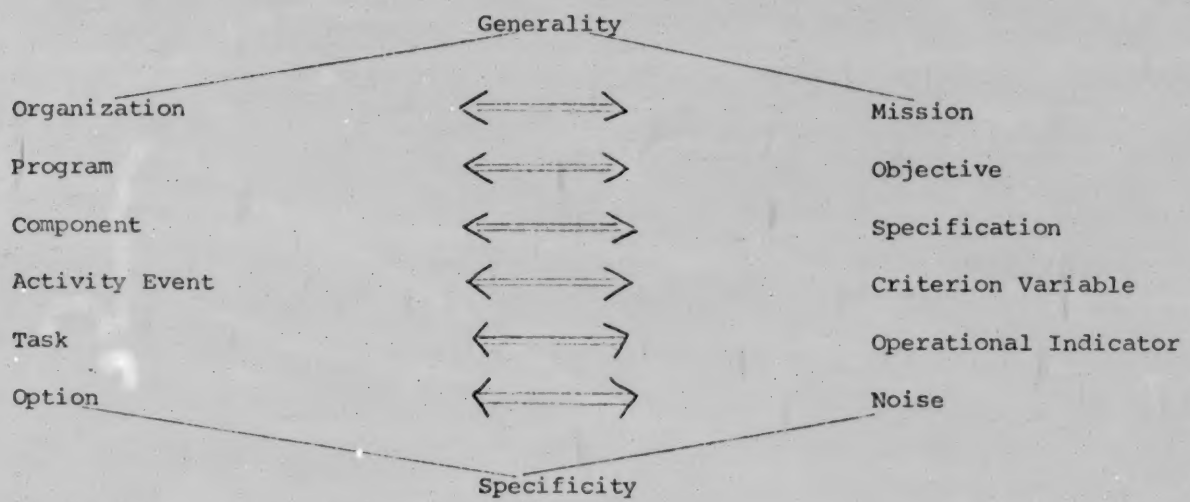

Figure 6

Organizational Design Correspondence
Generality-Specificity Continuum

Section V. Information Universe

1. Model-Theoretic Basis

The information universe for system decisions includes four subsets, namely, incompletedness, consistency, controllability, and observability.

A model-theoretic basis for submodel construction in organizational management systems design for educational enterprises is a framework for the elaboration of information subsystems crucial to goal-attainment. Substantive variety, uncertainty, redundancy, linkage configuration, state transitions, and reliability are elementary to the construction of submodels for the organizational management system of the field test to enable school superintendents to cope with multi-district problems (for example, needs assessment, planning, curriculum programming, evaluation). A model-theoretic basis for submodel construction enhances the likelihood of the adequacy of the development of organizational management.

A model-theoretic basis for submodel construction in organizational management systems design is the minimal dimensionality of substantive requisite variety crucial for the adequacy of the representation of subsystems of the referent enterprise. Substantive requisite variety is distributed in four subspaces of incompletability, consistency, controllability, and observability. Organizational management submodels conceptualize elements, relationships, uncertainties, redundancy, linkage configurations, state transitions, and systems reliability in these subspaces.

The organizational management system design elaborates a process and structure for a viable regional educational agency. The process is a problem solving algorithm: needs assessment, planning, programming, and evaluation. The structure is a persisting pattern fundamentally supportive

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of the process: information systems, policy making, personnel management, business management, and institutional relations. An intensive evaluation design for the field test must include special submodel construction to conceptualize substantive variety in terms of criterion variables, operational indicators, and acceptance levels. Process and structure submodels are to be constructed with reference to the model-theoretic basis (in mutual transactional development).

The problem solving process of the organizational management system was partitioned into a linear sequence of needs assessment, planning, programming, and evaluation. An information-theoretic conceptualization of this channel, in terms of uncertainties and reliabilities, underscores umltiplexing redundancy in organizational management. Problem channel capacity of an organizational management system is to be well defined with appropriate substantive variety. Submodel construction elaborates requisite systems design reliability for satisficing institutional attainment of objectives. Error in institutional attainment is subject to being made arbitrarily small via redundancy. A specific result of submodel construction is the representation of specific redundancies to increase institutional reliability and reduce uncertainty.

2. Well-Defined Correspondences

A model-theoretic basis for submodel construction in organizational management systems design is well defined in the following correspondences.

a. Incompletedness: adaptation, context evaluation, and planning decisions.

b. Consistency: integration, input evaluation, and structuring decisions.

c. Controllability: pattern-maintenance, process evaluation, and implementation decisions.

d. Observability: goal-attainment, product evaluation, and recycling decisions.

A well defined model-theoretic basis is a learning strategy. Well defined submodels represent the nodal-dominance redundancies and uncertainties of the linkage distribution of organizational management crucial to institutional goal-attainment. Alternative submodels of organizational management for planned change in educational enterprises may be constructed with a model-theoretic basis for an information field.

Incompletedness Information. Incompletedness encompasses the reflection of a logic upon itself to disclose an inadequate closure. A crack in the wall of the autonomous composure of a predicate calculus for action is persuasive of justifiable permeability or completion from without. The universe of criterion variables in the design calculus is subject to strategy shifting: elimination, combination, transfer, modification, and simplification. Operational indicators are charcterized by the same reservations: tactical shifting (appropriate for formative evaluation). Acceptability levels for product decisions concern channel capacity and boundary shifting. A fundamental product decision based upon incompletedness information is in terms of a criterion of maturity. What conditions and circumstances emit the predication of a "mature Educational Laboratory" or "mature Educational Cooperative?"

Consistency Information. The integration of subsystems and the coherence of design is attended to in criterion redundancy, multiplexing indicators, and reliability of criterion levels for product decisions.

Controllability Information. The manipulation of state-transition sequences, or next-state mappings is consequent upon product decisions based upon information about implication, connectedness, and transformation.

Such information is designated controllability information. The operational indicators, subject to formative search and manipulation, may be principal shapers, preventers, and encodable affecters. A manipulatable indicator may have an impulse-response function relative to its including criterion subsystem, and this impulse-response controllability information may reduce the uncertainty attendant to a product decision. Acceptability levels on criterion variables involve the performance index relating terminal error, instantaneous error, and control cost; satisficing boundaries (or optimizing maxima); and ambiguity. Ambiguity is the uncertainty of the output given the input.

Observability. Observability information is delineated, gathered, and provided in product evaluation to make product decisions. The decipherable operationality of criterion variables is a matter of concern. A criterion construct must be subject to ascertainment. A criterion event must be witnessable. Antecedent states must be inferable from a finite output sample. Operational indicators must have decodable effects to subserve fault assignment in convergence policies. Acceptability levels for criteria of success would include attention to fail-sale and equivocation. Fail-safe ensures safety due to warning system failure. Equivocation is uncertainty of input given the output.

Table 3

Requisite Variety for Systems Design and Evaluation

Variety \ Information	Controllability	Observability	Incompletedness	Consistency
Criterion Variable	Implication Connectedness State-transitions (next state mapping)	Decipherability Output transformation (output mapping) Criterion of Success	Strategy shifting (eliminated, combined, transferred modified, simplified) (inaccessible variables) Criterion of Maturity	Redundancy
Operational Indicator	Shaping dependency Preventer Encodability Impulse-response function	Fault assignment Decodability	Tactical shifting (Eliminated, combined, transferred, modified, simplified)	Multiplexing
Acceptability Level	Ambiguity Satisficing (Optimizing) Performance Index	Equivocation Fail-safe	Capacity Boundary Shifting	Reliability

CHAPTER 4

METHODOLOGICAL ADEQUACY

Section I. Instrumentation

Instrumentation is the invention or adaptation and utilization of devices to enable delineated information to be gathered. System decisions on the decision subsystems of the Educational Cooperative may require information on the adequacy, readability, and desirability of content. Also, the information could appertain to existence, desirability, and probability measures to states of the Educational Cooperative consequent to the operation of the decision subsystems.

The instruments should provide for content validity, have parallel forms whenever possible, and have concurrent measures if practical in the state of art. Content validity should receive consensual certification on functional readiness from the Cooperative staff, the evaluator, and expert consultants. Parallel forms should be developed after the first application of the instrumentation. Concurrent measures should be considered upon recommendation by consultants or staff. The instrumentation should gather information adequate for system decisions on the decision subsystems structure and process of the Educational Cooperative. A preliminary set of such instruments is provided in the appendices.

1. Mundane Existence

Current knowledge of the Cooperative, as gleaned through field activities, is apparently not refined to the extent necessary to be able to firmly state standards and levels of criterion variables and operational indicators except highly tentative trivial thresholds. Systematic observation of proposed

Table 4

Instrument Specifications

System / Decision Subsystem	Planning/ Incompletedness	Structuring/ Consistency	Implementation/ Controllability	Recycling/ Observability
Process				
Needs Assessment				
Planning				
Programming				
Evaluation				
Structure				
Policy-Making				
Information System				
Personnel Management				
Business Management				
Institutional				
Organizational-Set				

criterion variables and operational indicators to confirm existence appears to be a promising avenue to prime successive approximation to meaningful standards with reserved closures and revisions. One of the earliest concerns of a mathematician, for example, is the proof of an existence theorem central to the legitimation of further conceptualization. The first pass of evaluation on the field test should be proof of existence in terms of presence evidenced throug- criterion variables and operational indicators. The basic existence problem of quantification would allow possible inferences, elicit implications, and seek clarification contributing to discovery of acceptable threshold levels of satisfaction. There is an x as an element of the Cooperative, C, such that $y=f(x)$; that is $\exists x(y=f(x) \mid x \in C)$.

An aspect of the pursuit of a confirmation of existence as the first pass in the evaluation effort is the status of the decision subsystems detailing structure and process. Those decision subsystems suggest implicitly that closure on criterion variables and operational measures must be extremely cautious broad strokes. Conceptual clarifications and refinement in the development of the decision subsystems establish the details of operational indicators of the criterion variables. For example, in the planning subsystems the "setting of priorities" calls for behavioral detail which is crucial to operationalizing the indicators for the criterion of rationality.

An increase in the level of complexity is suggested in reference to Stufflebeam, et al. (1[illegible] p. 69):

> "Evaluation systems to support neomobilistic decision making usually are ad hoc, non rigorous investigations in the early stages of the change effort. A premium is placed upon creativity, and the studies are often exploratory and heuristic in nature. However, in later stages of the neomobilistic change effort rigor becomes the sine qua non."

In other terms for the evaluation of the Educational Cooperative a loose nearly mundane field research stance is necessary. The tone of

neomobilistic planned change one octave higher than mundane research satisfices with the existence of events and activities included in design.

2. Multiplexing Variety

The first evaluation must include the ontological divergence of variety from some transformation may distill a viable criterion model of the Educational Cooperative which will be reflected in a morphogenetic formative development in Cooperatives and strategic shifts in design.

Initial efforts to attain an evaluative capability for the Educational Cooperative would define a minimal basis for satisfaction with elaborated realization as the embodiment of design. The satisfaction gauges are criterion variables. The criterion variables are comparable to factors in a multivariate space. Each criterion variable is an information channel multiplexed by the variety of a subset of the multivariate space. Factor analytic techniques commence with variety space and delineate the multiplexed channels of the factors. The criterion variables are the multiplexed channels of satisfaction, and the approach is the reverse of the factor analytic technique: an expanded variety subspace is sought out for the criterion variables to generate a variety universe for authentication of realization.

The variety multiplexing criterion variables is to be operationalized. Operational detail in the primal phase of the confirmation of existence would be a limited behavioral prescription for the evaluator, with identification, categorization, enumeration, and rudimentary quantification very obvious. As the evaluation of the Cooperative structure and process developes, behavioral detail of the Cooperative would be incorporated into the operationalization of indicators of the criterion variables. This is an aspect of successive approximation to an appropriate universe of summative variety for the evaluation of the Cooperative.

3. Operationality

Operationalization must be based on observable evidence--existing, available, and accessible. Equally competent evaluators should be able to observe the evidence in reproducible and recurrent inspections. Written documentation, records of communication, transactions, and agreements, would, for example, take formal precedence as a general rule over verbal information. The level of formal evidence to be demanded for operational indicators, should not be expected to be more than what would mesh in with the signal-to-noise levels tolerated by the exclusion of variety--contingency and suppressor variables, pertinent to human parameters and the informal organization.

Section II. Formative Revision

The instrumentation should be developed as a by-product of the Educational Cooperative in such a manner as to be diffusible upon completion of the evaluation. However, the primary purpose of the instrumentation is for the evaluation of the Educational Cooperative. Learnings from the evaluation may result in formative modification of design. Any strategic shift in design or positive reinforcement may suggest different information requirements which will need to be reflected in instrumentation.

1. Matrix Sampling

Single organism evaluation may give an intensive look at organizational management in a regional educational agency, but conventional instrument validation may be strained. A viable supplement for this limitation on instrumentation is matrix sampling. A sample of Cooperative-type agencies, e.g., several from each category along the Hughes-Achilles (1971) spectrum of Co-operatives, could be brought into a reciprocal sharing agreement to refine the instruments, get comparative information, and advance limited release copies to

participating institutions in conjunction with consultancy or technical assistance germane to the decision subsystem and instrumentation involved.

2. Organization Taxonomic Unit (OTU)

A taxonomy of system decisions coupled with a taxonomy of structure and process decision subsystems of the Educational Cooperative gave specifications for instrumentation. Neither taxonomy is based upon direct observational data. An observational reporting schema using OTUs would enable a check to be made on the adequacy of both taxonomies. The data could be coded and analyzed by the taxa for decision making, compliance, bureaucracy, and systems theory A simple percentage comparison of the binary data would reflect the relative adequacy to manage the data.

3. PERT

Criterion events are loosely distributed along a time line in the decision subsystems of the Educational Cooperative. The network of events needs to be firmed up to enable a meaningful analysis of system states. The event cofiguration provides instantaneous state compositions, sequences, and paths. A highly detailed, consensual PERT diagram would provide the basic information for an analysis of the system states of the Cooperative. The modified-PERT diagram would be a clinical projective-type evaluative instrument.

4. Minutes Analysis

The contents of the minutes of the Boards of local school districts and Cooperatives are to be coded and analyzed. The taxa or coding categories and a coding form constitute an instrument for this purpose.

Section III. Analytical Techniques

1. General

Analytical methods will include frequency and percentage tabulations and graphic displays on process and structure; graph-theoretic modeling; automata modeling; state-space systems representation; and satisficing decision analysis. The data is to be gathered with instruments given in the appendices.

2. Frequency and Percentage Analysis

Items of instruments to gather information about the structure and the process will be grouped into meaningful clusters of actionable significance. Frequencies and percentages of congruence with design will be indicated for each field test.

3. Graph-theoretic Modeling

Alternative graph-theoretic models and submodels for hierarchical, multi-level organizational management are to be constructed from the data gathered by instruments (See appendices). Species of organizational management are to be evidenced in alternative nodal-dominance configurations. Substantive variety, uncertainties, redundancies, linkage configurations, and reliability are to be synthesized into construable models of development, degeneracy, evolution, and institutional maturation.

4. Automata Modeling

Design Machine. The Educational Cooperative design and operational system may be regarded as a system, S, with inputs, I, internal states, Q, output states, Z, next-state mapping functions, δ, and output mapping function, s, ω.

$$S = < I, Q, Z, \delta, \omega >$$

Composite Machine. The design and operational system are separately composite machines, S_c.

$$\text{Let } Mi = < I^i, Q^i, Z^i, \delta_i, \omega_i >$$

$$S_c = M_1 \times M_2 \times \ldots \times M_k = < I, Q_c, Z, \delta_c, \omega_c >$$

Show that there is an assignment function, for each major subsystem and the

macrosystem, such that

$$S = A(S_c) = < I, Q = A(Q_c), Z, \delta = A(\delta_c), \omega = A(\omega_c) >$$

Machine Identification. Identify the real I, Q, Z, δ, ω of the operational system and the design.

Minimal Machine. The identified machine for the designed synthesis and the cooperative entity is to be separately minimalized, that is, reduced to the most parsimonious state basis.

$$Q_m \subset Q \Rightarrow S_m = < I, Q_m, Z, \delta_m, \omega_m >$$

Equivalent Machine. The equivalence of each cooperative entity, S_F, with design S_D, is to be determined.

$$g_i \equiv g_j \text{ iff } \omega(J, g_i) = \omega(j, g_j)$$

(wherein J is input)

$$S_F \equiv S_D$$

Isomorphic Machine. The cooperative entity, S_F; is to be an isomorph of design, S_D.

$$S_D = < I, Q_D, Z, \delta, \omega >$$

$$S_F = < I, Q_F, Z, \delta_F, \omega_F >$$

$$f: Q_F \rightarrow Q_D$$

$$\omega_F (i, q) = \omega_D (i, f(q))$$

$$f (\delta_F (i, q)) = \delta_D (i, f(q))$$

$$i \in I, q \in Q$$

Incompletely Specified Machines. Partially mapping is productive of discrepancy, incongruence, and technical deficiency. Partial mapping may be incompletely δ-specified, incompletely ω-specified, and incompletely $\delta\omega$-specified.

δ-specified: subset IXQ into Q

ω-specified: subset IXA onto Z

Cooperative entities may tend toward incompletely specified machines.

Composite Machines. Cooperative entities may tend to convert the design machine into a submachine, Mi, and be a composite, Sc, of an operational system and another reference system.

$$Mi = < W^i, U^i, Y^i, \delta_i, \omega_i >$$

(wherein i = 1, Z, • • • K)

$$Sc = M_1 \times M_2 \times \cdots \times M_K = < I, Q_c, Z, \delta_c, \omega_c >$$

Find an assignment function, A, such that

$$S_D = A\ (S_c) = < I, Q = A(Q_c),\ Z,\ \delta = A(\delta_c),\ \omega = A(\omega_c) >$$

Each Cooperative may be treated similarly as a composite of local school machines (systems).

Each Cooperative may be similarly as a composite of algorithmic process and structure machines.

The design may be treated as a composite synthesis of local machines and a composite of process and structure machines.

Submachines. The design of decision subsystems of the Educational Cooperative present the designs for submachines S_S, of the organizational management system, S_D. A submachine is shown to exist when:

$$Q_s \subseteq Q$$

$$S_s = < I, Q_s, Z, \delta_s, \omega_s >$$

$$\delta_s\ (i, q_k) = \delta(i, q_k)$$

$$\omega_s\ (i, q_k) = \omega(i, q_k)$$

(wherein $i \in I$, $q_k \in Q_s$)

$$\delta_s (i, q_k) = q_j$$

(wherein $q_j \in Q_s$, $q_k \in Q_s$)

The analysis is to be made for each Cooperative entity and the design. Each submachine may be minimalized and analysed with respect to equivalance and isomorphism relative to design homologues.

5. State-Space Systems Analysis

The synthesis problem of system design is complemented by an identification problem. A complete identification of field test entities involves a complete statement of the state-variables, outputs, mapping functions, and matrix coefficients. The adequacy of the performance index of the system, product controllability, and observability are to be summatively determined and interpreted.

6. Satisficing

A satisficing problem involves an objective function, a tolerance function, a feasible domain of allowable decisions, and arbitrary sets. Letting X and be sets of criterion variables and acceptability levels:

$g: X \times \Omega \rightarrow V$ (objective function)

$: \Omega \rightarrow V$ (tolerance function)

The problem is to find a satisficing solution $X \in X^f \subset X$, $w \in \Omega$.

$$g(X, W) \leq \hat{} (w)$$

The satisficing criterion is represented by $\leq$. The satisficing problem is represented as (g, r_1, X^f, Ω). All system decision information is to be provided in repertoires of alternatives observant of satisficing solutions.

Summary

The general evaluation design for the Educational Cooperative includes the delineation, gathering, and providing of information for system decisions. Products are process and structure decision subsystems for the organizational management of an Educational Cooperative as an adaptive macro-system to facilitate educational change. System decisions include planning, structuring, implementation, and recycling. Information for these product decisions is delineated into four major categories: incompletedness, consistency, controllability, and observability. Criterion variables, operational indicators, and acceptability levels are defined for each category of decision information. The information is gathered with especially constructed instruments, and analysed for content and system behavior. Theoretical adequacy, congruence of operations with design, and effectiveness are given close consideration. The information is provided with formative and summative emphases respecting the requirements of different decision makers.

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Appendix A

Needs Assessment in the Educational Cooperative: An Evaluation Instrument

Assessment of Educational Discrepancies

____ 1. Objectives of needs assessment include(d):

____ a. identification of client's behavioral repertoire at the completion of:

____ (1) preschool

____ (2) Primary

____ (3) intermediate

____ (4) secondary

____ b. identification of client's behaviroal repertoire at varying levels of education among divergent

____ (1) educational agencies

____ (2) public agencies

____ (3) professionals

____ (4) community groups

____ c. identification of client's behavioral repertoire at varying levels of education as evidenced by

____ (1) school data

____ (2) perceptions of divergent educational and public agencies, professionals, and community groups

____ d. reporting of results of comparative analysis to local school boards for purpose of decision making regarding further Cooperative action

____ e. providing continuing means for assessing outputs:

____ (1) expected

____ (2) existing

____ 2. Major assessment activities include(d);

____ a. identification of sources of output indicators

____ b. identification of output indicators

____ c. determination of output expectations per indicator per level of education

____ d. classification of indicators by taxonomy of educational objectives

___ e. design of instruments to determine community expectations

___ f. sampling procedures for assessing community expectations

___ g. identification of sources for determining existing outputs

___ h. design of instruments to determine existing outputs

___ i. sampling procedures for assessing existing outputs

___ j. orientation of data collectors

___ k. collection of data

___ l. preparation for data analysis

___ m. comparison of observed and expected data

___ n. definition of discrepancies

___ o. reporting findings to:

(1) local school boards

(2) Cooperative boards

___ 3. Sources of indicators for expectations were identified and gathered.

a. a goal-stipulation scheme was generated.

___ (1) characteristics of goals were stipulated (e.g., nature, content, and source)

___ (2) policy guidelines for goal-stipulation were written, approved by the Board, and used

___ (3) programmatic recommendations were made

___ b. Local school systems were used as sources.

___ (1) achievement tests and scores

___ (2) curriculum guides and materials

___ (3) stated educational goals and school board policies

___ (4) school personnel

___ (5) school clients

___ c. state department of education

(1) state needs assessment

(2) studies (e.g., committees, commissions)

(3) budget reports

(4) hearings

(5) program objectives and guidelines

(6) legislation

d. Federal

(1) national needs assessment findings

(2) publications (e.g., Educational Daily, Congressional Record)

(3) program objectives and guidelines

(4) current priorities (e.g., directives, speeches)

(5) congressional committee reports

(6) White House Commissions

e. Planning District

f. local individuals and groups

g. local publications

h. professional publications

(1) teacher

(2) administrator

(3) accreditation

(4) fraternal and/or learned societies

(5) journals focusing on region

(6) future projections

(7) trade magazines

(8) school board associations

i. observation and community data

4. Content analysis was used as a basis for inference in order to identify output expectations from sources.

___ a. categories of statements were used.

___ (1) policy (general purposes)

___ (2) educational goals (general targets)

___ (a) input goals

___ (b) process goals

___ (c) output goals

___ (3) educational objectives (timed)

___ (a) program objectives

___ (b) curriculum objectives

___ (c) instructional objectives

___ (4) individual and group values

___ b. inferences were made.

___ (1) indicators of output expectations were arranged in a hierarchical, general-to-specific branching pattern.

___ (a) policy

___ (b) goal

___ (c) program objective

___ (d) curriculum objective

___ (e) instructional objective

___ 5. Expectations were classified by level of education.

___ a. primary

___ b. intermediate

___ c. secondary

___ d. post-secondary

___ 6. Expectations were classified according to a taxonomy of educational objectives.

___ a. cognitive

(1) knowledge

(2) comprehension

(3) application

(4) analysis

(5) synthesis

b. affective

(1) receive

(2) respond

(3) value

(4) organization

(5) characterization

c. psychomotor

(1) imitation

(2) manipulation

(3) precision

(4) articulation

(5) naturalism

7. Instruments were designed to determine community expectations.

a. Specific output indicators were established.

b. Populations were sub-setted for assessing community expectations.

(1) economic status

(2) specific interests

(3) governmental agencies

(4) age groups

(5) immediate clientele

(6) occupation

c. A type of instrumentation was established to solicit expectations.

d. An item-bank was established to solicit responses.

___ e. Instrumental format was planned.

___ f. Instruments were validated.

___ 8. Sampling procedures for assessing community expectations were completed.

___ a. The size(s) of the sample(s) was/were determined.

___ b. The most appropriate sampling procedure was determined (e.g., random, stratified, or cluster).

___ 9. Instruments were designed to determine existing outputs.

___ 10. Populations were subsetted for assessing existing outputs.

___ 11. Sampling procedures were completed for existing outputs.

___ 12. Data collectors were oriented.

___ a. instrumentation

___ b. time

___ c. place

___ d. disposition of data

___ e. manager's responsibilities

___ 13. Data collection was completed or planned.

___ 14. Preparations were made for data analysis.

___ a. Data were verified.

___ b. Data were coded.

___ c. Data were organized appropriately for analysis.

___ 15. Expected outcomes were compared with observed data.

___ 16. Discrepancies were defined.

___ a. Data-based discrepancies were affirmed.

___ b. School system comparisons were made.

___ (1) differences (contrasts)

___ (2) similarities

___ c. Sub-population profiles were constructed and interpreted.

___ 17. Assessment findings were reported to the Boards.

___ a. Cooperative Board

___ b. local school boards

___ 18. Continuous Needs Assessment was provided for via various mechanisms.

___ a. periodic inventories (e.g., annual, semi-annual)

___ b. content analysis of new documents and reports

___ c. recording of informal communications

___ d. monitoring of ongoing programs.

Formulation of Educational Problems

___ 19. Objectives in problem formulation included:

___ a. identification of existing program components and interrelationships associated with discrepancies

___ b. determination of environmental characteristics associated with discrepancies

___ c. determine deficiencies in existing program efforts

___ d. translate known deficiencies into problem statements

___ e. report problems to the Board

___ 20. Essential major activities were carried out in formulating educational problems.

___ a. Characteristics of the target population were identified.

___ (1) socioeconomic

___ (2) cognitive

___ (3) affective

___ (4) conative

___ (5) psychomotor

___ (6) physical

___ b. Existing and desirable program inputs were identified.

___ (1) program costs

___ (2) subject content

____ (3) media employed

____ (4) mediator characteristics

____ (5) time inputs

____ 21. Existing environmental conditions were identified.

____ a. home

____ b. community

____ c. school

____ 22. Existing or desirable program procedures were identified.

____ 23. Models of existing or desirable program procedures were constructed.

____ a. Major components were identified.

____ b. Component relationships were established.

____ 24. Problem formulation groups were identified.

____ a. Individual characteristics were considered.

____ b. Representation was considered.

____ 25. Problem formulation procedures were established.

____ a. Synectic processes were applied.

____ b. Brainstorming methods were used.

____ c. Fault tree analysis techniques were used.

____ 26. Statements of probable cause of discrepancies were established.

____ 27. Statements of problems were established.

____ a. Major problems were stated.

____ b. Sub-problems were stated.

____ (1) Performance weaknesses were defined.

____ (2) Performance gaps were defined.

____ (3) Resource inadequacies were defined.

____ (4) Procedural inadequacies were defined.

____ (5) Environmental inadequacies were defined.

___ 28. Statements were organized for ordering priorities.

Instrumentation

___ 29. Various data gathering techniques were considered.

___ a. interviews

___ (1) types of interviews

___ (a) structural

___ (b) unstructured

___ (2) item types

___ (a) fixed alternatives

___ (b) open-end critical incidence

___ (c) scale items

___ (3) strengths and weaknesses

___ (4) procedures

___ b. survey questionnaires

___ c. objective tests

___ (1) types of tests

___ (a) intelligence (aptitude)

___ (b) achievement

___ (c) personality

___ (2) strengths and weaknesses

___ (3) procedures

___ d. objective scales

___ (1) types of scales

___ (a) attitude scales

___ (1) summative ratings

___ (2) equal-appearing intervals

___ (3) forced-choice

(b) value scales

(c) strengths and weaknesses

(d) procedures (e.g., construction and administration)

e. observation techniques

(1) behavior categories

(2) unobstrusiveness

(3) rating scales

(a) category

(b) numerical

(c) graphic

(4) strengths and weaknesses

(5) procedures

f. projective methods

(1) types of projective methods

(a) association techniques

(b) construction techniques

(c) completion techniques

(d) expressive techniques

(e) role playing

(2) strengths and weaknesses

(3) procedures

g. semantic differential

(1) basic considerations

(a) identification of concepts

(b) construction of scales

(c) analysis of data

(2) strengths and weaknesses

____ (3) procedures

____ h. Delphi

____ i. Educational Charrette

____ j. Scenario

____ 30. Item construction was achieved to conform with

____ a. criteria

____ b. general procedures

____ 31. Instruments were validated.

____ 32. Instruments were reliable.

Appendix B

Needs Assessment Bibliography

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Appendix C

Planning in the Educational Cooperative:
An Evaluation Instrument

Priorities

____ 1. A mission statement was/has been approved for setting priorities.

____ 2. Expected outcomes for setting priorities were/have been determined.

____ a. Educational problem statements were/have been composed.

____ b. Problem dimensions were/have been clearly accentuated for setting priorities.

____ c. Comparison information bearing on the various problems was/has been provided.

____ d. Analytical techniques and results have been properly supportive of realizing expected outcomes.

____ e. Decision rules for comparison.

____ 3. A written rationale for setting priorities was/has been approved by the Board of Control.

____ a. A basis for setting priorities was/has been stated in purposive delimitation of program capability.

____ b. Direction by the constituency was/has been affirmed.

____ c. Responsibilities of a planner-analyst were/have been delineated, including:

____ (1) provision of necessary information

____ (2) analytical structure

____ (3) communication with the Board of Control

____ 4. The requisite conditions for setting goals were/have been adequately analyzed.

____ a. Limits in goal setting were/have been delineated.

____ b. Constraints on goal setting were/have been delineated.

____ c. Input needs essential to goal setting were/have been delineated.

____ d. Performance capabilities of the Cooperative in goal setting were/have been delineated.

____ e. Operational activities for goal setting were/have been delineated.

____ 5 Written criterion standards were/have been used in goal setting.

___ a. Written decision rules for ordering priorities were/have been used in goal setting.

___ (1) Decision rules for ordering priorities were/have been formulated on relevant organizational objectives and the rationale of the Cooperative.

___ (2) Decision rules for ordering priorities were/have been formulated relevant to the objectives and priorities of other agencies which have a legitimate role in establishing educational goals.

___ (3) Decision rules for ordering priorities were/have been formulated relevant to other governmental and community agencies and groups.

___ (4) Decision rules were/have been formulated appropriate to the severity of problems and the consequences of dealing or not dealing with them.

___ (5) Decision rules were/have been formulated relevant to the assessed performance.

___ (6) Decision rules were/have been formulated on the basis of what the Cooperative is not to deal with.

___ b. The clarity of the document on setting priorities was judged:

___ (1) by the staff.

___ (2) by the Board.

___ c. The extent of the involvement of Board members was judged:

___ (1) by their questions.

___ (2) by their general interest.

___ d. The relative ease with which consensus was reached on priorities, after study, was noted and analyzed.

___ 6. Methodological choices for setting priorities were/have been resolved by adequate consideration of derivative benefits and projected costs.

___ a. Syllogistic techniques for setting priorities were/have been considered.

___ b. Deductive techniques for setting priorities were/have been reasonably considered.

___ c. Inductive techniques for setting priorities were/have been reasonably considered.

___ d. An advocacy approach for setting priorities was/has been considered.

___ e. Various other techniques were/have been considered (e.g., sensitivity analysis, contingency analysis, afortiori analysis).

Standards

___ 1. A mission statement for setting minimum standards was/has been

___ a. formulated.

___ b. submitted to the Board.

___ c. approved by the Board.

___ 2. Expected outcomes for setting standards were/have been documented in verifiable performance objectives by dimensions of the problems.

___ a. A realistic statement of expected outcomes to attain were/have been documented.

___ b. A realistic statement of expected outcome on changes were/have been documented.

___ 3. A written rationale for setting minimum standards was/has been approved by the Board.

___ a. Written performance objectives were/have been formulated on:

___ (1) specific targets.

___ (2) the relating of targets to problems.

___ (3) the justification for targets in terms of Cooperative capability (e.g., past, future).

___ (4) the communication of intention of the Cooperative (e.g., other agencies, public).

___ (5) establishing boundaries of functions.

___ (6) establishing boundaries for measuring organizational achievements.

___ (7) a basis for evaluating the effectiveness of the organization.

___ (8) point of orientation which facilitates the control and intelligent management of problem solutions.

___ b. The rationale for setting minimum standards is adequate:

___ (1) justifies standards.

___ (2) validates standards.

___ (3) communicates intent.

___ (4) provides incentive/motivates.

___ 4. Requisite conditions for setting standards were/have been delineated.

___ a. Limitations on setting standards were/have been delineated.

___ b. Constraints on setting standards were/have been delineated.

___ c. Available inputs to setting standards were/have been delineated.

___ d. Operational conditions on setting standards were/have been delineated.

___ e. Operational activities for setting standards were/have been delineated by:

___ (1) Cooperative functions.

___ (2) Cooperative relations (e.g., other agencies, groups, individuals).

___ (3) the implications of operational activities for expected output of setting standards were/have been analyzed.

___ f. Requisite conditions for setting standards were/have been established in terms of the dimensions of the problem(s).

___ g. Requisite inputs essential to setting standards were/have been delineated (e.g., human, financial, information, and material) by source (e.g., Cooperative, agencies, groups, and individuals).

___ h. Requisite conditions for setting standards with respect to the performance capability of the Cooperative were/have been analyzed (e.g., past, future).

___ (1) Functional limits relevant to performance were/have been analyzed.

___ (2) Relational limits relevant to performance were/have been analyzed.

___ (3) Constraints relevant to performance were/have been analyzed.

(a) Positive-negative directionality was analyzed.

(b) Relational forces and conditions were analyzed.

5. The delineation of standards for setting standards was/has been achieved.

   a. Standards are clear.

   b. Standards are practical.

   c. Efficacy of standards as appropriate measures is affirmed.

   d. Moral and resource support was/has been received.

   e. Types of standards were/have been considered.

      (1) achievement

      (2) degree of change

      (3) type of change

      (4) rate of change

      (5) direction of change

6. Performance objectives for setting minimum standards were/have been adequate.

   a. Performance objectives for setting minimum standards were/have been valid based on:

      (1) principles

      (2) facts

      (3) evidence

   b. Performance objectives for setting minimum standards were/have been relevant to relators (e.g., germane, pertinent, and applicable).

   c. Performance objectives were/have been feasible in terms of achievability judged by internal-external conditionality.

   d. Performance objectives were/have been cognizant of key determinants of influence.

      (1) legal

      (2) economics

___ (3) technical

___ (4) political

___ (5) social

___ (6) situation

___ (7) action

___ e. Performance objectives were/have been acceptable to significant relators.

___ (1) validity

___ (2) relevant

___ (3) feasibility

___ (4) relative advantage

___ (5) adaptability

___ (6) diffusibility

___ (7) guideline usability

___ (8) requisites

___ f. Performance objectives for setting minimum standards were/have been consistent.

___ (1) External consistency was/has been attained (e.g., hierarchical -- policy, managerial, operational; political overlap, and communication).

___ (2) Internal consistency was/has been attained (e.g., with local school systems, standards with objectives and functions of the Cooperative, and support for attainment of objectives).

___ 7. Requisite conditions were/have been assessed for achieving realistic expected outcome as measured by established standards.

___ a. Activities were/have been projected to solve problems.

___ (1) Cooperative activities were/have been established.

___ (2) Activities involving others were/have been established.

(a) agencies

(b) groups

(c) individuals

b. Inputs essential to solution were/have been identified.

(1) Cooperative inputs

(2) Relators' inputs

(a) agencies

(b) groups

(c) individuals

c. Operational conditions essential to problem solution were/have been established.

(1) Cooperative conditions

(a) nature

(b) quality

(2) Relators conditions

(a) agencies

(b) groups

(c) individuals

d. Expected outputs which must result from activities were/have been established.

(1) Cooperative's expected outcomes

(2) Relators' expected outcomes

Alternatives

1. An adequate orientation to the problem was/has been achieved.

a. The treatment variety was/has been delineated.

b. Requisite conditions under which the Cooperative must function to generate alternatives were/have been delineated.

___ c. The specificity of the problem was/has been internalized.

___ d. A preparation period was/has been used:

___ (1) for asking questions,

___ (2) for hypothesizing,

___ (3) for data decisions.

___ (a) on pertinence,

___ (b) on accessibility,

___ (c) on analytical tractability.

___ 2. Procedures have been followed for generating alternatives.

___ a. The mission statement for generating alternatives was/has been prepared.

___ b. The mission for generating alternatives statement was/has been recommended to the Board of Control.

___ c. The action of the Board of Control on the mission statement was/has been to:

___ (1) accept,

___ (2) reject,

___ (3) modify.

___ 3. Expected outcomes of the generation of alternatives were/have been documented.

___ a. Alternatives solutions were generated for each problems.

___ b. Alternative solutions for any given problem addressed the dimensions of that problem.

___ c. The implications of actions within alternatives were/have been considered with respect to the relationship to the whole.

___ d. Models were/have been constructed for isolated cases.

___ 4. A ratipnale for generating alternatives was/has been formulated.

___ a. Alternatives increased chances of solution.

___ b. The comparability of alternatives was/has been accentuated.

____ (1) Alternatives were/have been sensitive to:

____ (a) delineation of elements,

____ (b) delineation of relationships.

____ (2) Alternatives were/have been clearly formulated.

____ 5. Requisite conditions for generating alternatives were/have been identified under field conditions.

____ 6. Standards for the generating of alternatives were/have been formulated in terms of the effectiveness of the planner-analyst in accomplishing the expected outcome.

____ a. Alternatives were/have been presented clearly by the planner-analyst.

____ b. Alternative solutions were/have been related to the dimensions of the problem(s).

____ c. Appropriate analytical techniques were/have been ably applied.

____ 7. Problem-solving participants were/have been selected in accordance with appropriate written decision rules.

____ a. Knowledge and wide experience with the target population was/has been called for by decision rule(s).

____ b. Direct association with the target population was/has been called for by decision rule(s).

____ c. Membership in the target population was/has been stipulated by decision rule(s).

____ d. Knowledgeability with respect to specific problems was/has been stipulated by decision rule(s).

____ e. Members of the Cooperative staff were/have been stipulated by decision rule(s).

____ f. Appropriate representation of agencies with legitimate responsibility relative to the problem was/has been called for by decision rule(s).

____ g. Appropriate representation of agencies with vested interest relative to the problem was/has been called for by decision rule(s).

____ h. Knowledge skills were/have been tapped by decision rule(s) (e.g., verbalizing divergent viewpoints, perceiving situations and conditions from varying perspectives, conceptual talent, emotional involvement).

____ i. Capability for approaching the problem from a wider perspective than those immediately involved with the problem was/has been stipulated by decision rule(s) (e.g., outside specialists, agencies with higher level responsibilities, and agencies with encompassing goals).

____ 8. Individuals and groups were/have been oriented to the task of generating alternatives.

____ a. Provision was/has been made for a cohesive effort.

____ (1) Misunderstanding and conflict were/have been guarded against.

____ (2) Ground rules were/have been formulated.

____ b. All available information was/has been applied.

____ c. Each problem was/has been viewed from different perspectives (e.g., personal experiences).

____ d. Each problem was/has been understood in terms of its own dimensions.

____ e. Various activities were/have been used to solve the problem (e.g.,

____ (1) massage-by-target

____ (a) visit target

____ (b) interact with target

____ (c) experience target environment

____ (d) experience target conditions

____ (e) experience target deficiency

____ (2) massage-by-implication

____ (a) witness

____ (b) future well-being of clients

____ (3) massage-by-similarity

____ (4) massage-by-Cooperative

____ (a) purpose

___ (b) function

___ (c) relation

___ (d) transformation

___ 9. Appropriate leadership behavior was/has been established.

___ a. Criticism or judgments of ideas was/has been ruled out.

___ b. Belittlement was/has been discouraged.

___ c. Free-wheeling was/has been welcomed and encouraged.

___ d. Quantity of contribution was/has been solicited and encouraged.

___ e. Combinations of ideas was/has been encouraged.

___ f. Operational solutions were/have been solicited and stressed.

___ 10. The synectic process was/has been utilized in problem stating and solving.

___ a. Personal analogy was/has been used in problem formulation and solution.

___ b. Direct analogy was/has been used in problem formulation and solution.

___ c. Symbolic analogy was/has been used in problem formulation and solution.

___ d. Fantasy analogy was/has been used in problem formulation and solution.

___ 11. Incubation and illumination were/have been utilized in generating ideas.

___ 12. Solution ideas were/have been recorded as they were/have been established.

___ 13. The preparation of alternative solutions was/has been the responsibility of the planner-analyst.

___ a. Multiple solutions to different dimensions of the problem were/have been:

___ (1) refined

___ (2) stated with specific reference to each dimensions

___ (3) combined in various ways

____ (4) described in terms of the relationships among solution elements.

____ b. Alternative solutions were/have been prepared with explicit delineation of:

____ (1) elements

____ (2) relationships

____ (3) strategy

____ 14. Each alternative solution was/has been presented in the form of a model with components relating to the dimensions of the problem.

Appendix D

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Appendix G

Educational Programming in the Educational Cooperative: An Evaluation Instrument

Educational Programming

1. The program designer was/has been capable relative to:
   a. general understanding of the systems approach
   b. understanding of the Educational Cooperative concept and process
   c. knowledge of Cooperative districts
   d. knowledge of controls of school activities
      (1) statutory laws
      (2) regulations
   e. knowledge of successful curriculum strategies
   f. knowledge of newly advocated curriculum strategies
   g. leadership
      (1) management techniques
      (2) personnel administration
      (3) change techniques
      (4) group dynamics
      (5) understanding educational psychology
      (6) evaluative techniques
2. Expected difficulties were/have been identified.
   a. financial limitations
   b. attitudes of the people
   c. policies and laws of the respective state
   d. physical limitations
   e. human resources limitations

CHOICE OF BEST ALTERNATIVE

___ 3. A cost-benefit analysis was/has been done by the program-designer on alternative programs for each actionable need.

___ a. A detailed analysis of the problem was/has been completed and/or understood.

___ b. A complete list of alternatives was/has been prepared.

___ c. Any and all alternatives which fail to attack the problem were/have been eliminated.

___ d. A detailed analysis of the minimal acceptable standards for problem solution was/has been completed.

___ e. Any and all alternatives which would not provide minimum acceptable standards were/have been eliminated.

___ f. A detailed analysis of all available resources was/has been completed.

___ g. All alternatives which obviously would require more resources than are available were/have been eliminated.

___ h. The exact costs of those alternatives remaining on the basis of the availability of resources were/have been determined.

___ i. All resourceable alternatives were/have been ranked with respect to the degree each would exceed the minimum acceptable standard set for problem solution.

___ j. An analysis of each alternative was/has been completed in terms of projected costs and expected outcomes.

___ k. The alternatives to become the basis for program development was/has been selected.

PROGRAM DESIGN

___ 4. Prespecified purposes were/have been analyzed and/or refined by the program designer.

___ a. The level of initial specificity in planning was/has been comprehended by the program designer.

___ b. Detailed program performance objectives were/have been written to supplement the planning objectives.

___ c. Basic analytical questions were/have been asked.

(1) What behavior is expected?

(2) How is performance to be observed?

(3) Have evoking stimuli been identified?

(4) Are resources available to provide stimuli?

(5) Are acceptable performance levels specified?

(6) Are the circumstances given for expected performance?

d. Refinements in objectives were/have been made with consideration of:

(1) given problems

(2) chosen alternative solution

(3) program recipients

(4) learning environment

(5) available resources

5. A repertoire of planning components was/has been generated.

a. A brief review of objectives was/has been written.

b. A description of the target group was/has been written.

c. A detailed list of exact design tasks was/has been written.

d. A personnel roster indicating design contributions was/has been prepared.

e. A calendar of design events was/has been prepared.

f. A budget for program design was/has been authorized.

INPUTS, ACTIVITIES, AND EVENTS

6. The availability, capability, and role expectations of mediators were/have been considered for the public, governing board, administrators, teachers, others.

Consideration / Domain	Availability	Capability	Role-Expectations
Public	____	____	____
Governing Board	____	____	____
Administrators	____	____	____
Teachers	____	____	____
Others	____	____	____

____ 7. The availability of resources and requisite expertise relating to method were/have been considered for materials, content, media, and techniques.

Consideration / Aspect	Availability	Requisite Expertise
Materials	____	____
Content	____	____
Media	____	____
Technique	____	____

____ 8. A knowledgeability of context was/has been evidenced with respect to:

____ a. world

____ b. nation

____ c. community

____ d. school

____ e. space

____ f. time

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___ 9. The expected attainment of learners was/has been specified for each program.

___ 10. The role-expectations of learners were/have been specified for each program (especially with respect to mediators).

___ 11. A description of program requirements for facilities was/has been written (source, location, utilization).

___ 12. A complete and detailed set of specifications for each program was/has been written.

PROGRAM IMPLEMENTATION

___ 13. Mediators fulfilled role-expectations with respect to program character.

___ a. Mediators fulfilled role-expectations with respect to completely new programs.

___ b. Mediators fulfilled role-expectations with respect to programs supplementive to unchanged existing programs.

___ c. Mediators fulfilled role-expectations with respect to programs supplementive to changed existing programs.

___ d. Mediators fulfilled role-expectations with respect to replacement programs.

___ 14. Resources were/have been available for implementation of methods.

___ a. Specified materials were/have been available (type and quantity).

___ b. Specified media were/have been available (equipment and supplies).

___ c. Specified operational facilities were/have been available.

___ d. Specified contact-time with learners was/has been available.

___ e. Specified program content was/has been treated.

___ f. Specified techniques were/have been used.

___ 15. Power-authority relationships were/have been used to legitimatize each program.

___ 16. An awareness by learners of opportunities through each Cooperative program was/has been generated.

___ 17. A desire by learners for benefits of programs was/has been created.

Appendix H

Educational Programming Bibliography

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Appendix I

Evaluation in the Educational Cooperative:
An Evaluation Instrument

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Antecedent Activities

____ 1. The problem definition was understood before an evaluation design was developed.

____ a. The problem statement has been/was written and discussed in terms of evaluative implications.

____ b. The programmatic priorities have been/were written and discussed in terms of implications for evaluation.

____ c. The programmatic standards have been/were listed and their implications for evaluation discussed.

____ d. Programmatic alternatives have been/were identified and their implications for evaluation analyzed.

____ 2. Solution design was understood before an evaluation design was developed.

____ a. Program specifications have been/were analyzed singly and jointly to ascertain implications for evaluation.

____ b. Programmatic implementation strategies have been/were analyzed to determine implications for evaluation.

____ c. Program component's compatibility has been/was analyzed to determine implications for evaluation.

____ d. Resource sufficiency for program has been/was analyzed to determine implications for evaluation.

____ e. The mutual compatibility of the problem definition and the solution design has been/was analyzed to determine implications for evaluation.

____ 3. An evaluation design has been/was synthesized appropriate for the problem solution design.

____ a. A comprehensive flow chart of the evaluative process has been/was developed.

____ b. A delineation of data has been/was accomplished suitable for determining the degree of realization of programmatic specifications.

____ c. A procedure for gathering evaluative data has been/was devised.

____ d. A method of organizing evaluative data has been/was devised.

____ e. A scheme of analysis of evaluative data has been/was devised.

___ f. A report has been/was planned to communicate evaluative findings to targeted users.

___ g. A plan for the circulation of evaluative materials has been/was devised providing for distribution and collection.

___ h. The compatibility of the evaluation design with the solution design has been/was analyzed.

Progress

___ 4. An evaluative readiness has been/was realized.

___ a. A readiness to conduct information search has been/was realized.

___ b. A readiness to make decisions on discrepancy has been/was realized.

___ c. A readiness to make decisions on probable causes of discrepancy has been/was realized.

___ d. A readiness to generate alternative courses of action has been/was realized.

___ 5. The syntal purpose of program components has been/was analyzed.

___ a. The syntal purpose of program components relative to contribution to the realization of objectives has been/was analyzed (in terms of actual instantaneous existence of components, the degree of realization of objective by relative payoff from each component).

___ b. The syntal purpose of program components relative to contribution to the realization of specifications has been/was analyzed.

___ 6. The synergistic purpose of program component interactions has been/was analyzed.

___ a. The synergistic purpose of program component interactions relative to contribution to the realization of objectives has been/was analyzed.

___ b. The synergistic purpose of program component interactions relative to contribution to the realization of specifications has been/was analyzed.

___ 7. A dynamic assessment of progress has been/was evident in provision for subjectivity and an attention to knowledge which facilitates decision making.

Search

____ 8. Periodic information search has been/was conducted, in accordance with prescriptive design for gathering data.

____ a. Scheduled on-site interviews have been/were conducted where appropriate.

____ b. Scheduled telephone interviews have been/were made where appropriate.

____ c. Scheduled written reports have been/were made where appropriate.

____ 9. Impromptu information search has been/was conducted, in accordance with prescriptive design for gathering data.

____ a. Impromptu written reactions to critical incidents have been/were brought into the data gathering function.

____ b. Impromptu telephone interviews have been/were made where appropriate.

____ c. Impromptu on-site visits have been/were made where appropriate.

____ 10. Information search decision rules have been/were formulated in the evaluation design and applied for choosing to terminate, recycle, or advance.

____ a. Scientific criteria for the appraisal of information characterized the decision rules (e.g., validity, reliability).

____ b. Situational criteria have been/were incorporated into the decision rules (e.g., intuitive closure, pressing deadline).

____ 11. Discrepancies have been/were determined on operational, criterion indices to judge the degree of realization of specifications and/or objectives.

____ a. Quantitative discrepancies have been/were made wherever appropriate.

____ b. Qualitative discrepancies have been/were appraised in consultation with program designers.

____ 12. Decision rules on discrepancies have been/were formulated in the evaluation design and applied in choosing to terminate, recycle, or advance.

____ a. Scientific criteria have been/were reflected in the decision rules.

___ b. Situational and/or subjective criteria have been/were allowed to modify a purely objective decision (e.g., qualitative judgment in consultation with program designers).

Cause

___ 13. Probable causation has been/was analyzed (e.g., using a faulting technique) in accordance with the provisions for the identification of cause given in the evaluation design.

___ a. Causal elements and relationships with a programmatic locus have been/were attended to in the analysis.

___ b. Causal elements and relationships with an environmental locus have been/were attended to in the analysis.

___ c. Some analytical techniques have been/were applied which establishes fault and confirms linkages between discrepancies and causes, in accordance with provisions for analysis in the evaluation design.

___ 14. Decision rules have been/were posited in the evaluation design and applied in choosing to terminate, recycle, or advance relative to the identification of causes of discrepancies.

___ a. Scientific criteria contribute to the primary substance of the decision rules.

___ b. Extra-scientific criteria (e.g., situational and/or subjective) are secondary verniers in the decision rules.

Alternative Generation

___ 15. Alternative courses of action (adaptive or homeostatic) have been/were generated consistent with probable causation of discrepancy.

___ 16. Decision rules have been/were posited in the evaluation design and applied in choosing to terminate, recycle, or advance relative to the generation of alternative courses of action pertinent to discrepancy.

___ a. Scientific criteria have been/were primary contributors to the decision rules on generating alternatives.

___ b. Extra-scientific criteria have been/were admitted as secondary verniers in the decision rules on generating alternatives.

Reporting

___ 17. Reports have been/were prepared to synthesize and disseminate evaluative judgment, in accordance with the evaluation design.

___ a. Reports have a format which gives emphasis to background information, discrepancy statement, probable cause, list of alternatives, and recommendations.

___ b. Reports are characterized by completeness and utility.

Evaluative Criteria

___ 18. The evaluation reflects adequate valuing of accepted criteria for evaluation.

___ a. Scientific criteria are evident in the evaluation (viz, internal validity, external validity, reliability, objectivity).

___ b. Appropriate extra-scientific criteria have been/were considered in the evaluation (relevance, significance, scope, credibility, timeliness, pervasiveness).

___ 19. Evaluative recommendations reflect a sensitivity to purposive change strategy.

___ a. Recommendations tend to adjust operations to plan.

___ b. Elaboration of plan is called for where appropriate, by questioning objectives, specifications, and standards.

Selection and Modification

___ 20. The choice of alternatives by the decision maker has been/was especially noted and tracked.

Formative Profile

___ 21. Formative evaluation manifests a definite composition.

___ a. Decision points have been non-programmed real-time events.

___ b. Emphasis has been on technical efficiency.

___ c. The scope of perspective has been infra-structure and micro-processes.

___ d. The locus of activity has been the internal field of action.

___ e. The aim has been tactical control.

___ f. The mode of operation has been to contain malfunction through negative feedback.

Summative Profile

___ 22. Summative evaluation evinced consideration of theoretical adequacy.

___ a. Program syntality was explicated (e.g., content, techniques, media, mediator, participant, outcomes).

___ b. Program synergy was explicated in relationships of program elements, and the synthetic generation of more than the separate transformations by disparate elements will be included.

___ c. Dimensions of theoretical adequacy were used to appraise program syntality specifications.

___ d. Dimensions of theoretical adequacy were used to appraise program synergy specifications.

___ e. Dimensions of theoretical adequacy were used to appraise the problem definition.

___ 23. Summative evaluation manifested a definite composition.

___ a. Decision points were programmed, discrete-time events.

___ b. Emphasis was on theoretical adequacy.

___ c. The scope of perspective was holistic supra-structure and macro-processes.

___ d. The locus of activity was external to the field of activity.

___ e. The aim was strategic control.

___ f. The mode of operation was to maximize behavior conducive to goal-attainment through positive feedback.

___ 24. Summative evaluation made an inquiry into environmental effects on the program.

___ 25. Summative evaluation included an inquiry on the relative cost-effectiveness of comparable programs.

Appendix J

Educational Evaluation Bibliography

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Appendix K

Cooperative Information System:
An Evaluation Instrument

Organizing Events

1. A statement of policy for Board approval encouraging the creation and maintenance of a Cooperative Information System was:
   a. prepared by the Executive Director
   b. submitted to the Board
   c. based on a developed accompanying rationale
   d. revised after review
2. A policy level group was formed to exercise exploratory and managerial functions.
   a. Objectives of the policy level group have been stated.
   b. Areas of representation were decided.
   c. Members were appointed to the policy level group.
   d. Functions of the policy group were identified.
      (1) Exploratory
         (a) delineation of information
         (b) seeking information
         (c) certifying the information
         (d) translation into standards
            (1) immediate directional objects
            (2) evaluative backdrops
      (2) Managerial
         (a) organize and manage a design effort
         (b) appraise design reports
            (1) receive
            (2) be conversant with
            (3) evaluate

(c) organize and manage an implementation effort

(d) appraise implementation strategies and reports

(1) receive

(2) be conversant with

(3) evaluate

(e) organize and manage a renewal effort

(f) appraise renewal reports

(1) receive

(2) be conversant with

(3) evaluate

e. membership from top management

(1) Board members

(2) Executive Director

(3) Key Cooperative staff members

(4) District central office staff

3. A training program was developed and conducted.

a. Training needs were analyzed.

(1) conceptual nature

(2) structural and dynamic qualities of "play of action"

(3) areas of operational responsibilities

b. Training objectives were stated.

c. A training strategy was chosen.

(1) number and length of sessions

(2) session leadership

(3) material-member interaction

d. Orientation materials were prepared.

e. Training sessions were conducted.

f. Training sessions were evaluated.

(1) conducted by Cooperative staff member

(2) summative

(3) follow-up areas identified

4. Training materials consisted of:

a. Policy statement (with rationale)

b. Policy group's objectives statement

c. Information System Conceptual Profile

d. Acquisition Process Profile

e. Policy group role and Acquisition Process Profile

Defining the Problem

5. The information needs of Cooperative decision-making were defined.

a. Cooperative decision-makers were identified.

(1) policy level/Board members

(2) top management level/Executive Director

(3) program management level/Program Coordinator

b. Decisional functions of the Cooperative were identified.

(1) Program decisional function:

(a) Needs assessment

(b) Rank priorities

(c) Set standards

(d) Generate alternatives

(e) Select alternatives

(f) Design and implement program

(g) Program evaluation

(2) Program delivery decisional function

(3) Planning and Evaluation

(a) Monitor opportunities

(b) Plan Cooperative activities

(c) Program evaluation

(1) formative

(2) summative

(d) Long-range plans

(1) adequate

(2) realistic

(3) organizational

(4) Communications

(a) Maintain internal communications

(1) intra-Cooperative

(2) Cooperative-District

(b) Coordinate dissemination of program information to the public at large

(c) Assess outputs of participating districts

(5) Administrative Services

(a) Prepare and administer a budget

(b) Develop and maintain the organizational structure and appropriate administrative procedures

(c) Establish and administer procedures for the employment and training of personnel required for the efficient operation of the Cooperative.

c. Functions were attached to decision-makers.

(1) Board functions (Cooperative objectives)

(a) select Executive Director

(b) establish objectives, policies, and plans

(c) analyze periodic program reports

(d) establish safeguards

(1) properties

(2) funds

(e) disseminating Cooperative information to member districts

(f) selecting Advisory Council members, liaison, and consultation

(2) Executive Director

(a) collecting and organizing district output information

(b) recommending programs to Board

(c) conduct program evaluations

(d) assign and supervise personnel

(e) prepare policies and regulations

(f) prepare and administer budget

(g) recommend personnel administration

(h) establish and maintain mutually beneficial relationships with appropriate agencies and organizations

(i) monitor support

(j) manage facilities and equipment

(3) Program Directors

d. The central decision-making process was identified.

(1) problem identification (needs)

(2) rank priorities

(3) set standards

(4) generate alternatives

(5) select alternatives

(6) design program

(7) implement program

(8) evaluate program

___ e. The decisional function of the Cooperative was classified.

___ (1) hierarchical levels X Process stages

___ (2) Structural components of the Cooperative Information System:

___ (a) objectives and policies

___ (b) assessment

___ (c) planning

___ (d) resource allocation and control

___ (e) administrative services

___ (f) program evaluation

___ f. The kinds of information needed to support decision functions (by structural components).

___ 6. Standards have been/were elaborated for the Cooperative Information System along the dimensions of:

___ a. performance

___ b. cost

___ c. time

___ 7. Standards for the Information System have been/were ranked in priority.

___ 8. Standards have been/were articulated to the design group by the policy group.

___ a. mutual understandings were elucidated

___ b. mutually acceptable reporting schedule for the design group have been/were worked out

Design and Information System

___ 9. Design group has been/was responsible for producing several documents:

___ a. system specifications document

___ (1) system components

___ (2) data base

(3) information flow

b. document on operational procedures

10. The members of the design group have:

a. working knowledge and experience with systems analysis in organizations

b. specific knowledge in the design of information systems in organizations

c. knowledge of the Cooperative as an organization

d. specific experience in the design of information systems in organizations

11. Decisional criteria or expectations of the policy group for design products have been/were generated.

12. The policy group applied decisional expectation criteria to design products.

Implementing An Information System

13. The Information System has been/was tested.

a. Technical testing showed:

(1) the system could operate under field conditions

(2) formative alteration took place

b. Human testing revealed:

(1) attitudinal (distrust, reluctance, hostility, acceptance)

(2) capacity (assimilative, performance)

c. (Successful) pilot testing activities included:

(1) identifying specific applications

(2) preparing and/or acquiring the necessary material and equipment

(3) training personnel

(4) activating system

(5) evaluating and documenting all aspects of system performance

(6) refining specifications

(7) presenting revised specifications to the policy group

14. Full implementation of the Information System in the Cooperative was decided upon.

15. The Information System was installed Cooperative wide.

16. The Information System has been/was evaluated.

a. Operators evaluated the technical aspects of the system's structural and dynamic character.

(1) data files

(2) information flows

(3) data manipulating techniques

(4) data collection, processing, and delivery procedures

b. Users evaluated the worth of the system in terms of:

(1) purpose (in terms of standards)

(2) standards (adequacy)

Appendix L

Management Information Systems Bibliography

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Appendix M

Business Management in an Educational Cooperative:
An Evaluation Instrument

Business Management

___ 1. Purchasing guidelines were/have been written into official policy.

___ a. Purchase orders were/have been treated in official written policy.

___ b. Requisitions were/have been covered by official written policy.

___ c. Payment of invoices was/has been covered by official written policy.

___ d. Quantity purchasing was/has been covered by official written policy.

___ e. Competitive bidding was/has been covered by official written policy.

___ f. Issues of supplies was/has been covered by official written policy.

___ g. Petty cash funds were/have been covered by official written policy.

___ 2. All purchasing actions were/have been guided by:

___ a. product appropriateness,

___ b. appropriate relationship between quantity and cost,

___ c. product availability when needed,

___ d. proper price.

___ 3. Financial accounting guidelines were/have been rendered to official written policy.

___ a. Initial recording of financial data was/has been ensured.

___ b. Accounting for available funds was/has been achieved.

___ c. Budgetary procedures were/have been established.

___ d. A sound basis for cost accounting was/has been established.

___ e. Comparisons of financial information among Cooperative programs (and other similar programs in the state) were/have been facilitated.

___ f. The accuracy of Cooperative planning and research activities was/has been improved.

___ g. Reliable reporting to the governing board and public on the conditions and progress of Cocperative efforts was/has been facilitated.

___ 4. Property management guidelines were/have been written into official policy (receipt, storage, and disbursement of supplies, equipment, and property).

Possession \ Action	Receipt	Storage	Disbursement
Supplies	___	___	___
Equipment	___	___	___
Property	___	___	___

___ a. Executive Director was/has been delegated responsibility for property management.

___ b. Property management procedures were/have been easily understood by employees.

___ 5. Personnel management guidelines were/have been written into policy (e.g., travel, monthly expense accounts, employee records, bonding).

Appendix N

Personnel Management in the Educational Cooperative:
An Evaluation Instrument

PERSONNEL MANAGEMENT

1. Personnel procurement policies were/have been developed.

   a. Personnel recruitment was/has been covered by policy.

   b. Recruitment procedures were/have been delineated for the implementation of policy.

      (1) accepting applications

      (2) search

      (3) year-round continuation

      (4) careful planning

   c. Personnel selection was/has been covered by policy.

      (1) systematic procedure

      (2) variety of appraised techniques

         (a) complete

         (b) reliable

      (3) job descriptions and specifications

      (4) comprehensive application forms

      (5) checking credentials

      (6) personal interviews

      (7) observation of candidates

      (8) permanent personnel folders

   d. Procurement procedures were/have been characterized by:

      (1) definite purpose

      (2) interrelatedness

      (3) verification

         (a) personal correspondence

         (b) telephone communication

___ 2. Personnel utilization was/has been formally written into policy.

___ a. Personnel placement policy was/has been written.

___ (1) Cooperative needs were/have been pre-imminent in the placement policy.

___ (2) Assignment for effective service is required.

___ b. Personnel orientation was/has been affirmed in written policy.

___ (1) General working conditions are/have been included in the orientation.

___ (2) Grievance procedures are/have been included in the orientation.

___ c. Primary responsibilities were/have been identified for each position.

___ 3. A compensation policy was/has been written.

___ a. Fair pay was/has been made imperative by policy.

___ (1) A salary schedule was/has been used by the Cooperative.

___ (a) A minimum pay is given for each position.

___ (b) A maximum pay is given for each position.

___ (c) Periodic increments are given for each position.

___ (d) The salary schedule compares favorably with schedules of similar organizations.

___ (2) Initial pay reflects:

___ (a) responsibility

___ (b) experience

___ (c) training

___ (d) skills

___ b. Group insurance was/has been made imperative by written policy.

___ (1) Health insurance was/has been provided by policy.

(a) Health insurance provides hospitalization.

(b) Health insurance provides surgical coverage.

(c) Health insurance provides major medical coverage.

(2) Life insurance was/has been provided by policy.

(3) Accident and sickness insurance was/has been provided by policy.

c. Personnel leave was/has been allowed by written policy for:

(1) sickness

(2) vacation

(3) emergency

(4) maternity

(5) military duty

4. A personnel development policy was/has been developed.

a. Personnel growth was/has been provided in written policy.

b. Personnel evaluation was/has been provided by written policy:

(1) validity

(2) credibility

(3) acceptability

(4) effectiveness

(5) composite ratings

(6) conferences

(7) identification of strengths

(8) identification of weakness

c. Personnel records were/have been provided by written policy to contain:

(1) educational background data

(2) experience record

(3) salary history

(4) professional growth history

5. A written policy on the separation of personnel was/has been developed.

a. Dismissal action is provided by policy.

b. Voluntary resignation is provided by policy.

c. Retirement is provided by policy.

6. Resources for personnel management are provided by policy.

a. A staff for personnel management is provided by policy.

b. Facilities for personnel management are provided by policy.

7. The formulation of personnel policy requires the approval of the Board of Directors.

8. The Executive Director was/has been involved in the formulation of personnel policy.

a. The Executive Director recommended policy to the Board.

(1) new policy

(2) revised policy

b. The Executive Director defined policy problems for the Board.

c. The Executive Director suggested alternative policies on each problem.

d. The Executive Director furnished the Board information on each policy problem.

e. The Executive Director advised the Board on the appropriateness of policy alternatives.

f. The Executive Director shared with the Board the appraisal of policies.

9. Written policies on the administration of policies were/have been developed.

a. The nature of policies as guidelines for action was/has been affirmed by policy.

(1) The serious impairment of freedom to search for alternative goals and means was/has been precluded by policy.

(2) The discouragement of initiative was/has been precluded by policy.

(3) Provision was/has been made by policy for changing policy.

(4) Integration and interrelatedness of policy was/has been required by policy.

b. Responsibility for the administration of policy was/has been delegated to the Executive Director by the Board.

c. The relationship between the Executive Director and the Board was/has been clearly demarcated.

10. Each policy of the Educational Cooperative was/has been formally written.

11. Procedures to implement policies were/have been prescribed.

12. Periodical review was/has been provided for personnel policy management.

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Policy - Making Bibliography

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Appendix P

Policy-Making in the Educational Cooperative:
An Evaluation Instrument

Definitions and Rationale

1. Distinct advantages of written policy were/have been:

   a. Administrative and managerial decisions achieved greater consistency.

   b. Valuable resources were conserved by resolving variations of the same question under one policy.

   c. An atmosphere conducive to good public relations was created.

   d. Conflicts and pressures were managed more adequately.

   e. Criticism of managerial and administrative actions were reduced.

   f. Review and evaluation of administrative actions was facilitated.

   g. Better communications channels were opened.

   h. Variety in interpretations was avoided.

   i. Responsibilities were clearly delineated for:

      (1) Cooperative Board

      (2) Executive Director

      (3) Cooperative Staff

2. Stages in policy development have been/were:

   a. Recognition of need in a specific area

   b. Authorization of development activity

   c. Development

   d. Review

   e. Revision

   f. Adoption

   g. Administration

   h. Communication

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___ 3. The Cooperative Board exercised duties in stages of policy development:

___ a. Recognize need for policy.

___ b. Authorize policy development.

___ c. Review policy.

___ d. Approve policy.

___ 4. The Executive Director exercised duties in stages of policy development:

___ a. Recognize need for policy.

___ b. Develop policy.

___ c. Revise policy.

___ d. Administer policy.

___ 5. The Cooperative Staff exercised duties in stages of policy development:

___ a. Recognize need for policy.

___ b. Review policy.

___ c. Communication of policy

Suggested Policy Development

___ 6. An official organizational name was adopted in policy.

___ a. confederative designation?

___ b. unique?

___ c. brief?

___ d. identifier?

___ 7. Organizational composition as a confederation was stated in policy.

___ a. Each participating agency was designated.

___ b. The type of membership of each participating agency was designated.

___ 8. Official organizational charts were presented in policy relative to:

____ a. the institutional role set of the Educational Cooperative

____ b. the intra-Cooperative communication channels

____ 9. Written policy included provision for preparing and revising a statement of philosophy.

____ 10. Written policy indicated the objectives of the organization.

____ 11. Written policy affirmed a commitment to the Cooperative Process:

____ a. Needs Assessment

____ b. Problem Definition

____ c. Ranking Priorities

____ d. Setting Standards

____ e. Generating Alternatives

____ f. Selecting Alternatives

____ g. Program Specifications

____ h. Program Implementation

____ i. Program Evaluation

____ 12. Written policy provided legality to the governing function of the Cooperative Board of Control.

____ a. Control

____ b. Composition

____ (1) Superintendents

____ (2) Representatives

____ (a) State Department

____ (b) Institution of Higher Education

____ (c) Others

____ c. Proxy representation

____ 13. Written policy expressed the voting rights inherent in membership on the Cooperative Board.

____ 14. Written policy indicated the duties and responsibilities of the Cooperative Board.

___ a. Selecting the Executive Director

___ b. Establishing organizational

___ (1) objectives

___ (2) policies

___ (3) overall plans

___ c. Evaluating and approving policies and plans proposed by the Executive Director

___ d. Analyzing periodic program reports

___ e. Establishing adequate safeguards relative to:

___ (1) properties

___ (2) funds

___ f. Disseminating information to member school districts regarding accomplishments of the Cooperative

___ g. Selecting members for an Advisory Council

___ (1) liaison procedures

___ (2) consultation procedures

___ 15. Written policy delineated the events crucial to the Cooperative Process

___ a. Board actions

___ b. Executive Director's actions

___ 16. Written policy indicated the responsibility for organizing and maintaining an Advisory Council.

___ 17. Written policy identified the responsibilities of the Executive Director:

___ a. Executive Director was designated as chief officer of the Board.

___ b. Executive Director recommends appropriate policies for the Board's consideration.

___ c. Executive Director implements and executes policies adopted by the Board

___ d. Executive Director presents program information to the Board.

___ e. Executive Director assures workable Cooperative-community relations.

___ f. Executive Director participates in community activities.

___ g. Executive Director nominates candidates for staff positions with care.

___ h. Executive Director recommends purchases of equipment and supplies.

___ i. Executive Director presents budget to Board for approval.

___ j. Executive Director administers the budget.

___ k. Written policy requires congruence with specifications relative to the responsibilities of the Executive Director:

___ (1) collect and organize district output information

___ (2) recommend programs

___ (3) conduct comprehensive program evaluations

___ (4) assign and supervise all personnel

___ (5) prepare policies and regulations

___ (6) prepare and administer a budget

___ (7) make recommendations on personnel administration

___ (8) establish and maintain mutually beneficial relationships with appropriate agencies and organizations

___ (9) monitor the environment for sources of financial support

___ (10) administer all facilities and equipment

___ 18. Written policy governed the conduct of meetings of the Board.

___ 19. Written policy required a Cooperative Information System.

___ 20. Written policy required a public relations program.

___ 21. Written policy called for a periodic review of policy.

Appendix Q

Content of Minutes of Board of Directors:
An Evaluation Instrument

Content Categories*

01	Extractive (Curriculum) Demand Input
02	Extractive (Instruction) Demand Input
03	Extractive (Personnel) Demand Input
04	Extractive (Business) Demand Input
05	Symbolic (Meetings) Demand Input
06	Symbolic (Publication) Demand Input
07	Symbolic (Tributes) Demand Input
08	Symbolic (Programs) Demand Input
09	Material Support Input
10	Obedience Support Input
11	Deference Support Input
12	Articulation, Political Conversion
13	Aggregation, Political Conversion
14	Rule Making, Governmental Conversion
15	Rule Application, Governmental Conversion
16	Rule Adjudication, Governmental Conversion
17	Demand Communication
18	Support Communication
19	Extraction Output
20	Regulation Output
21	Symbol Output
22	Allocation Output

*Adapted from J. D. Scribner, A Functional-Systems Analysis of School Board Performance (Ann Arbor: University Microfilms, 1966).

Appendix R

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Appendix S

Effectiveness of the Educational Cooperative:
An Evaluation Instrument

I. Criterion Variables

A. Descriptive Panel

1. Inclusion: to include in a given Educational Cooperative any school districts which can be served with satisfaction.

2. Control: to govern the Educational Cooperative through a policy board, which delegates administrative responsibility for the Cooperative to an Executive Director.

3. Fiscal Investment: to move toward greater local investment in the Educational Cooperative.

4. Cooperative Rationality: to make decisions on programs on the basis of planning and evaluation.

5. Regionality: to operate regional educational programs with optional participation by school districts.

B. Performance Panel

1. Cost-effectiveness: making programs available, for the participating districts, with desired benefits at less expense.

2. Local Rationality: influencing participating districts to analyze educational problems and devise solutions in an orderly, rational manner.

3. Reallocation: influencing participating districts to reallocate resources in order to achieve desirable educational outcomes.

4. Resourcefulness: bringing resources of other organizations (particularly state departments of education and institutions of higher education) to bear upon the problems of participating districts.

II. Descriptive Panel

A. Inclusion

1. Contiguity: identify the district boundaries of members of the Cooperative on an official map of the region, and note the lack of disjointed members not sharing a border with another member.

2. Unitary Intersection: note the mapped intersection of the Cooperative area and the adjoint planning and development district, and identify and enumerate those Cooperative members in the intersection.

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___ 3. Contractual Complement: identify and enumerate any Cooperative members not contained in the mapped intersection of the Cooperative area and the adjoint planning and development district.

___ 4. Conditions: identify any conditions of membership imposed by the Cooperative.

___ 5. Radius: (Scaled maps of the Cooperative area shall be used, with speed zone data from the state highway agency.) Determine whether the Cooperative service area is less than or equal to one-hour driving time.

___ 6. Enrollment: the Cooperative's pupil population will be determined from school district data to determine if that population is between specified limits.

___ B. Control

___ 1. Board Superintendents: the intersection of the sets of superintendents in the Cooperative area and on the Cooperative's Board of Directors shall be inspected to identify and enumerate elements of equivalence.

___ 2. Board Representatives: official acceptance of identified legitimate interest of members of the Board of Directors who are not superintendents in the Cooperative region shall be identified and cited.

___ 3. Executive Director: the contract of employment of the Executive Director shall be inspected and verified.

___ 4. Output Evaluation: inspect instruments, data summaries, and reports on output.

___ 5. Program Evaluation: inspect instruments, data summaries, and reports on programs.

___ 6. Personnel Assignment: read and verify contracts of Cooperative employees.

___ 7. Budget Preparation: inspect budget prepared by the Executive Director.

___ 8. Facility Administration: determine who has responsibility for facility management.

___ 9. Equipment Administration: determine who has responsibility for equipment management.

___ 10. Program Recommendations: read, classify, and enumerate specific program recommendations by the Executive Director.

___ 11. Policy Generation: read, classify, and enumerate policies (and regulations) generated by the Executive Director.

___ 12. Policy Approval: read, classify, and enumerate approvals by the Board of policies generated by the Executive Director.

___ 13. Interagency Relations: identify, classify, and enumerate contacts with other agencies, including correspondence and documented conferences.

___ 14. Support Monitor: identify, classify, and enumerate supporting agencies which have been monitored by the Executive Director.

___ 15. Support Query: identify, classify, and enumerate queries by the Executive Director relative to gaining support for the Cooperative.

___ 16. Support Porposal: read, classify, and enumerate any proposals of the Executive Director aimed at getting support for the Cooperative.

___ 17. Personnel Recommendations: read, classify, and enumerate any personnel recommendations by the Executive Director.

___ C. Investment

___ 1. Local Contribution Rate: verify contribution rates through official documentation.

___ 2. Local Revenue: verify receipt of local revenue, and state amounts.

___ 3. Outside Revenue: verify receipt of outside revenue, and state amounts.

___ D. Regionality

___ 1. Implementation: identify and enumerate all school districts of the Cooperative in which each program is operated, and visit each scene.

___ E. Rationality

___ 1. Needs Assessment: inspect any instruments, data summary, and report(s) identifying needs. List needs. Administer needs assessment instrument.

___ 2. Priority Setting: identify list of needs in order of importance. Administer planning instrument section on setting priorities.

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___ 3. Setting Standards: cite standards for each program. Administer planning instrument section on setting standards.

___ 4. Alternatives Generated: document alternatives considered in arriving at each program. Administer planning instrument section on generating alternatives.

___ 5. Selection of Alternatives: document the consideration of each method selected as the most promising one. Administer program instrument on choice.

___ 6. Program: study each program, and visit operational scenes. Administer program instrument on design and implementation.

___ 7. Evaluation: audit evaluations of new programs, noting whether results of such programs were analyzed. Administer evaluation instrument.

___ III. Performance Panel

___ A. Cost-Effectiveness

___ 1. Capital Cost: sum expenditures and outlay for buildings and grounds incurred by the Cooperative in the operation of specific programs.

___ 2. Material Cost: sum expenditures for equipment and supplies incurred by the Cooperative in the operation of specific programs.

___ 3. Personnel Cost: sum salaries for personnel paid by the Cooperative in the operation of specific programs.

___ 4. Effectiveness: determine program effectiveness.

___ B. Reallocation

___ 1. Capital Differential: determine the change in the shared value of buildings and grounds used in the operation of programs.

___ 2. Material Differential: determine the change in the cost of equipment and supplies used in the operation of programs, including prorated shares.

___ 3. Salary Differential: determine the change in the salaries of personnel required to operate programs.

C. Resourcefulness

1. Capital Resource: determine the value of buildings and grounds used by the Cooperative which was contributed by other organizations.

2. Material Resource: determine the value of equipment and supplies contributed by other organizations to the Cooperative.

3. Personnel Resource: determine the value of personnel man-hours contributed by other organizations to the Cooperative.

4. Financial Resource: determine the revenue contributed to the Cooperative by other organizations.

Appendix T

Organizational Management: Theory

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Appendix U

Educational Research and Development:
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